

COAL AGE

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Bituminous in Relation to Mining Growth

CENSUS returns for 1919 covering the entire mining industry and separately that of bituminous coal, published in this issue, provide an opportunity for some interesting generalizations. Whereas ten years ago in number of enterprises the soft-coal trade represented but 17.6 per cent of the whole, in 1919 the figure was 31.2. In number of mines the proportionate increase was even more startling; soft coal mines were 33.1 per cent of the total in 1909 and 60.4 in 1919. Persons engaged in the bituminous coal industry increased from 534,814 in 1909 to but 583,155 ten years later, and these totals represented 51.2 per cent of all engaged in mining in 1909 against 54 per cent in 1919. In respect of power used coal likewise recorded a relative gain, from 26.6 per cent of the total in 1909 to 32 per cent in 1919.

Here the apparent advantage ends, however, for capital investment shows a relative decrease, from 31.3 per cent ten years ago to 27.3 per cent, the total of principal operating and general expenses from 38.3 per cent to 39.3 per cent and value of product from 38 per cent in 1909 to 35.5 per cent in 1919. The mineral industry as a whole recorded an increase of 160.7 per cent in value of products in the ten-year period compared with which the bituminous coal industry shows but 143.8 per cent gain. The most significant feature of these returns is that the bituminous coal industry is shown to have been thinned out—diluted, as it were. No great increase in capital investment (79 per cent) or in persons engaged (9 per cent) but in number of enterprises a gain of 89 per cent and of mines of 38 per cent. The business is spread out to a greater extent and the risks and profits are being divided among a greater number of proprietors.

Bashful Coal

SOMEONE has said that we learn some from observing the successes of others, a little more from the failures of others, more from our own successes, but most of all we learn from our own failures. Success comes soonest and in largest measure to him who profits most by the combined experiences of those who have gone before, who takes the medicine fate hands him and goes after each day's problems afresh. Before the fateful 1917 the coal industry was largely a heterogeneous mass of individuals, here and there seeking the light collectively, but for the most part each plodding his own way, seeking to make ends meet in a business so highly competitive that the fittest who survived were becoming fewer each year.

From the day this country entered the war, however, and the coal industry, through the Peabody committee, first had a common and national expression, experience has come in large doses. In the short space of four years the coal industry has passed through a trial by

fire such as the railroads and public utilities were each a score or more of years in experiencing. Dr. Garfield in submitting his final report to the President noted that, whatever the merits of the policy of war-time regulation of coal, things were settled that needed settlement—the principle of equal car supply, the knowledge on the part of the people that coal is a basic commodity, that the production of coal is essentially a transportation proposition, and that there are enormous wastes both in the production and distribution of fuel. But vastly more important than these, he states, "was perception of the fact that industrial enterprises producing or distributing basic necessities—food, fuel, shelter, clothing and transportation—are in a real and practical sense charged with public interest; that neither the men who labor nor the capital employed, nor both of them together, can be permitted to settle questions touching the adequate supply of these basic necessities without consultation with the government, representing the entire people."

Above all, it seems to us, these four years have brought to the coal industry a trade consciousness and have developed a national viewpoint and called forth national leadership. Where before the war there were innumerable small antagonistic groups, there is now at least the semblance of national expression for the industry. This growth has brought a train of responsibilities and as well has focused popular attention on this industry. Whether coal is to tread the path of regulation or is to go its way unfettered depends on the quality of its leadership in the next few years, if not in the next few months. Reciting the doleful history of the railroads, Will Payne, writing in *The Saturday Evening Post* recently, says that "Much of the public was then [in 1905-1906, when the Hepburn Bill was passed] hearing nothing of American railroads except to their discredit. Government control of the railroads rode in on the crest of the muckrakers' muddy wave."

The early history of the public utilities—gas, electric light and street cars—is characterized by franchise-grabbing and disregard of public rights and opinion. Because people found it necessary to use trains and trolleys, gas and electricity, and they could get these services only from the railroads and public utilities, the owners and operators of these monopolies chose to disdain the feelings of their customers. Regulation followed.

The question before the coal industry—next in line, we are told—is whether the hard lessons of experience by these predecessors will be taken home and studied, whether this industry will profit by the successes and the failures of others and by its own successes, or will learn from its own failure too late. The public in turn has made mistakes in its treatment of basic industries and it too has opportunity to profit by these errors in policy, but its attitude toward coal is going to be largely

determined by the strength of the ideas of the respective sides representing private industry on the one hand and governmental or communistic control on the other. There is but one way in these times that these ideas can effectively reach the public—through the printed word.

Have you ever stopped to consider those things about coal that claim popular attention and the few attempts made so far to carry the truth the length and breadth of the land, and who it is that so far have been the spreaders of the gospel? Buyers want good coal. For four years the people had so much shoddy that they now turn with eagerness to a merchant who promises old-time quality. They will respond to the coal merchant, big or little, who makes it clear that once again coal is available without slate. Buyers want service. Coal is a necessity, but no good feeling is produced by an attitude on the part of the seller of "Take it or leave it." Persistence in this direction leads to the same end for coal that it did for street cars.

Even for necessities price is a secondary consideration with the buyer when the merchandising of the commodity is sound. The buyer is chiefly concerned in getting a fair deal, and the successful merchant is he who sends the purchaser away satisfied. Food is a necessity, but many an article of relatively high price comes on our tables, desired and acquired because we have been sold the idea that it is of particular quality. The delivered cost is the first concern of the buyer, and this varies so with each locality as to become a local question, but with the proper viewpoint on coal the consumer is more apt to reason correctly with respect to the reasonableness of what he is called upon to pay. From the experiences in meeting the public of the vendors of food products and of such comforts and luxuries as automobiles and electrical appliances the coal industry can learn much. Is it not better to cultivate good will before the advent of paternalistic control than afterward, as are the railroads and utilities? Thomas Robson Hay, in this issue of *Coal Age*, discusses the value of publicity to the coal industry and asks "Why not cultivate this public in a spirit of service?"

Manufacturers of equipment for burning coal are the only ones so far to attempt in a large way to show consumers how to use coal. Some few shippers have mechanical engineers to train the boiler-room force how to get the most out of the furnace and a particular coal, and thus to cement the trade. But, *mirabile dictu*, we have found one such, at least, who mixes this type of progressivism with the belief that the practice is a trade secret, and therefore to be hushed up. And so the manufacturers alone are advertising to the millions of consumers on the principles of combustion and proper use of coal.

And now the railroads are carrying the message of coal to the public. In an advertisement, a reproduction of which appears on another page of this issue of *Coal Age*, the New York Central tells a sane and timely story about coal to people in every city and town of importance in this country, from coast to coast. The railroad is doing this in no spirit of pulling the chestnut out of the fire for the coal man, but because it is good business to cultivate trade, traffic and good will. It is helpful to coal because of what will happen to that chestnut if some one does not pull it out of the fire.

Verily, the public may well say, "Who is this bashful boy, Coal? Why don't you speak for yourself, John?"

Booster Ventilation Problems

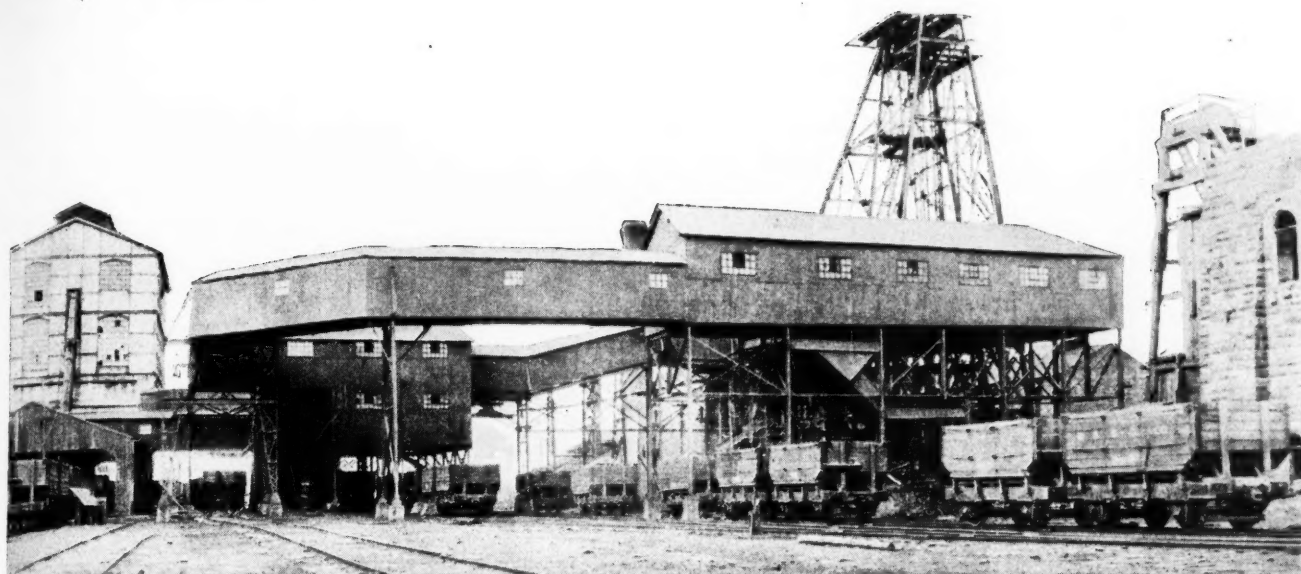
IF coal mines did not have an unhappy faculty of exploding, booster fans might have a larger place in their equipment. From a mathematical and scientific point of view no exception can be taken to the booster fan, which has much to commend it economically. Situated a mile or more underground, however, it is hard indeed to rely on equipment of that kind for the re-establishment of air circulation after an explosion to the full violence of which the booster inevitably must be exposed.

All other objections to such fans can be removed by proper installation and care. The underground fan can be so placed as to be in no danger of being fed on stale air. It can have an attendant; it can be arranged to show a light at any given point or points, thus testifying whether it is running or idle. At the Indiana plant, near Pittsburgh, a red electric light flickers as long as the mine fan is in operation, and should the fan stop the water in a water gage falls, an electric contact is closed and as a result an automatic siren is blown, warning the whole countryside and those, incidentally, whose duty it is to order by telephone the vacation of the mines. Similar arrangements could be made to protect a booster fan.

With such provisions ventilation by a booster, in the absence of an explosion, might be in a slight degree safer than by a single fan, though about this opinions might differ. If a door were left open the booster at a side heading would still keep air in circulation. It might do it, it is true, with air that is driven round the second time, but even that is better than having the air cut off entirely by an open door, for air which stands in a gassy place soon becomes more dangerous than that which travels over the same territory twice and passes for much of its travel through districts that are not gassy or make hardly any gas. Moving air, in short, usually is safer than dead air, though it may fail to announce that it is stale and therefore dangerous and so fail to give the warning that would bring the men out. If, however, it becomes saturated to the point of ignition the explosion resulting is more widespread than with dead air.

Boosters, however, are not much needed in shallow workings, for in that event ravines usually give an opportunity for the placing of shafts by which fresh air can be fed to the workings. It is likely that boosters will find an appropriate place in the West, where the mountains are high and the beds pitch so that great depths are attained and great distances are likely to be traversed to reach the more distant coal. They seem also to have a place in those mines which go long distances under water, but they should not be installed where these conditions do not exist unless one fan be placed at the intake and one at the return. Both should be capable of affording the mine in time of disaster the quantity of air needed for rescue work.

No wonder the mine inspector dreads the introduction of the booster. As too often installed it merely recirculates vitiated and devitalized air and frequently air already having such a gas content as to be explosive or nearly explosive, especially in the presence of coal dust. The booster undoubtedly has many faults, but an exception may well be made in cases, like those at the Princess Colliery, where the air has to be delivered to a point three and a half miles distant through a heading which probably leaks incurably.



PRINCESS COLLIERY BANKHEAD SHOWING WASHERY ON LEFT AND OLD TOWER OF CORNISH PUMP

Nova Scotia Steel & Coal Co. Is Completely Removing Coal Seam Under Ten Square Miles of Sea Area*

Room-and-Pillar Methods Used—Engine Plane About Ten Thousand Feet Long—Air Travels Seven Miles—To Lower Water Gage of Fan Would Use Low-Pressure Boosters in Series—Little Water To Be Handled

BY A. S. McNEIL†
Sydney Mines, N. S.

IN THE year 1825, Messrs. Rundall, Bridge and Rundall, of London, organized a company called the General Mining Association, Ltd., which acquired from the Duke of York the coal beds known and unknown in the whole Province of Nova Scotia. The Duke at that time held a 60-year lease by the royal prerogative of George IV. This lease was executed in 1826, and Richard Brown, an eminent engineer and geologist, came to Cape Breton as manager for the association.

In 1827 the company took formal possession of the property, and from that time forward coal mining has been carried on uninterruptedly at Sydney Mines. The first shaft was sunk in 1830 at what is known as the Yard Pit, which was 200 ft. deep. The second shaft, known as the Jacob Pit, was sunk in 1834, and was 320 ft. deep.

In 1838 the coal from what was then and is still known as the "Old Sydney Main Seam" for the first time was used for bunkering purposes. Its good name was soon fully established and universally acknowledged both at home and abroad. In 1849 the Crown released to the Government of Nova Scotia all its interests in the minerals of the province.

The third shaft, known as the Queen Pit, was sunk on the Old Sydney Main Seam in 1854. This shaft is about 400 ft. deep. In 1857 the General Mining Association surrendered its claim to all mines and minerals, except coal, within certain defined limits, thus ending the Duke of York's lease.

In 1864 Richard Brown retired and was succeeded by

his son, Richard H. Brown, lately deceased. Mr. Brown continued to manage the affairs of the General Mining Association and its successor, the Nova Scotia Steel & Coal Co., Ltd., at Sydney Mines up to the year 1901.

PRINCESS COLLIERY DATES BACK TO 1868

In 1868 the sinking of the "New Winning" or Princess mine was begun. This pit also is on the Old Sydney Main Seam, and was not completed until 1876. The coal was encountered at a depth of 680 ft. Some years ago the sinking of this famous shaft, with its attendant difficulties, formed the subject of an interesting paper read before the Nova Scotia Mining Society by the late R. H. Brown.

It should be noted here that all the above-mentioned operations by the General Mining Association were confined to what may be described as the peninsula between Big Pond on the north and Sydney Harbor on the south, a comparatively limited area. The Princess Pit was located as near the coast line at Cranberry Head as possible, for all the land area overlying the main seam in this district was included in the workings allotted to the previous sinkings and only by extensions into the measures under the sea could a new mine be opened.

This mine, therefore, was to be the outlet for a submarine lease of four square miles acquired in 1858 by the General Mining Association and extending one mile southerly into Sydney Harbor from Chapel Point and two miles directly out to sea in a northeasterly direction, and having an outside boundary parallel to the coast line two miles in length. This submarine lease was in 1886 further extended parallel to the coast line in a northwesterly direction, making a total outside boundary three miles in length and coming ashore at

*Paper read before a meeting of the Nova Scotia Mining Society, April 5, 1921, entitled "Notes on Coal Mining in Submarine Areas at Princess Colliery, Sydney Mines."

†Superintendent of mines, Nova Scotia Steel & Coal Co.

Little Pond, or making in all about four square miles of submarine territory.

The underground projection for the new mine included two main haulageways or angle deeps,* one on the north and the other on the south, evidently at the least angle of dip at which an engine-plane haulage could be operated. Later, at a point 2,000 ft. from the pit bottom on the south angle deep, another heading was begun on or approximately on the pitch, to win the coal from the lower levels, as the distance between the angle deeps was increasing rapidly and the haul on the "in-between" level was becoming too long.

Underground operations of the Nova Scotia Steel & Coal Co. from the time it took over the holdings in Sydney Mines in 1901 followed along the lines adopted by the General Mining Association until about the year 1910, when practically all the deep workings had been driven to the east boundary of the property. It then became necessary to acquire additional territory for this colliery. In 1912 a sublease was granted the Nova Scotia Steel & Coal Co.'s adjoining holdings. This sublease contains two square miles. It is one mile in width and extends eastwardly two miles, where it in turn is bounded by outside leases held by the Nova Scotia Steel & Coal Co.

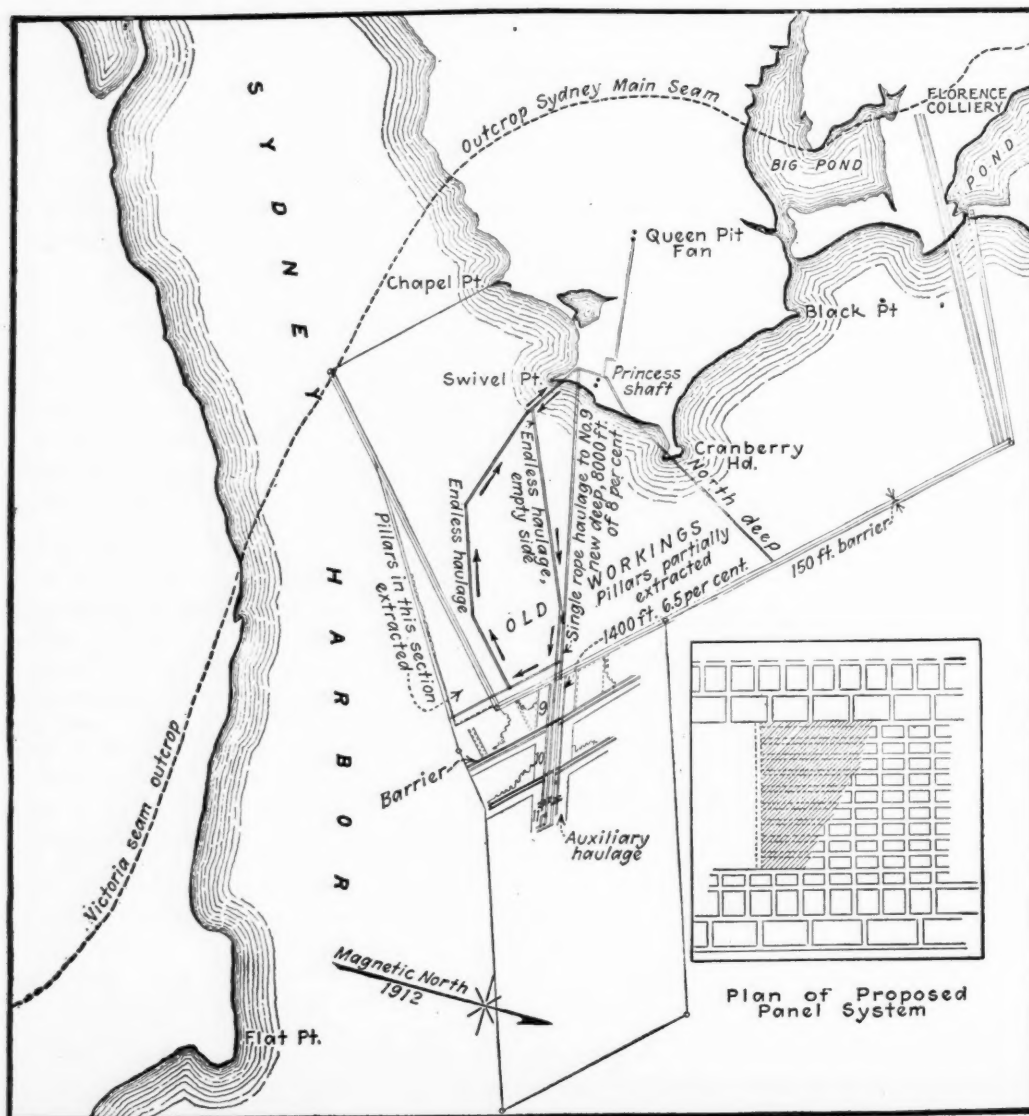
On the acquisition of this sublease a new haulageway was projected from the shaft through the old workings

into the outside territory in a direction best suited to take the coal from the sublease and at the same time enter the company's own outer holdings at a desirable point. This new haulageway was completed to the barrier in 1915. It is 6 x 10 ft. inside the timbering and perfectly straight to the face, which is now 12,000 ft. from the pit bottom.

Under the land the General Mining Association used the room-and-pillar method. Rooms were about 18 ft. wide and pillars 30 ft. This proportion of room to pillar did not vary to any great extent. In the new pit the workings were laid out with 16-ft. rooms having 40-ft. pillars. This proportion was maintained for a distance of 2,000 ft. from the pit bottom, where the cover was about 760 ft. thick. It appears that the pillars were increased from 30 to 40 ft. so as to take care of the additional weight which resulted from the increase in cover.

Evidently, however, no difficulty of any kind was experienced and eventually the policy was adopted of making 30 ft. pillars and 16 ft. rooms, which proportion was maintained for another 700 ft. to the dip. At this point the pillar size suddenly jumps to 60 ft., with the rooms 16 ft. wide, as before. Probably indications of the bottom heaving and other troubles developing were attributed to the smaller pillar in this section. This change from 30-ft. to 60-ft. pillars occurred at a point about 2,700 ft. from the pit bottom, where the cover

*Slopes at an angle to the pitch of the bed.

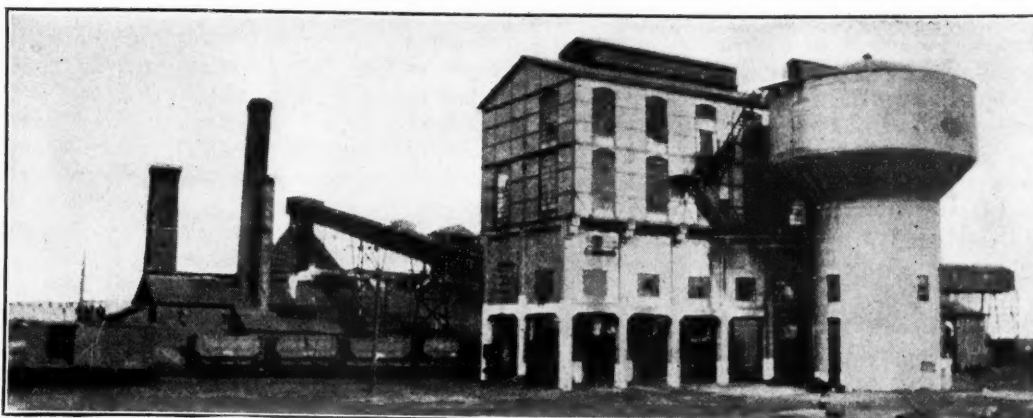


Undersea Workings

This shows a small part of Sydney Harbor and the extensive submarine workings of the Nova Scotia Steel & Coal Co. The coal dips east, the earth cover being from 600 to 1,700 ft. thick. In a large part of the mine the pillars have been extracted, yet the workings are quite dry. The mine ultimately will reach a distance of four miles from the shore at Cranberry Head. The bed is gradually becoming more level and should eventually reach a basin. No displacement faults disturb the workings. The air travels from the Queen Pit to the face and back, a distance of about seven miles. A system of booster fans is proposed which, without using excessive water-gate at any point, will deliver a larger quantity of air than the mine is now receiving.

Washery

A reinforced-concrete building erected by Simon-Carves, Ltd., of Manchester, England, and provided with Baum jigs which are air-operated, the influx and release of the air causing the water to pulsate. Washed coal leaves the jigs in glass-lined launders.



was about 830 ft. thick. Thereafter to the outside boundary or to a point about 7,000 ft. from the shaft 60-ft. pillars and 18-ft. rooms were maintained.

Prior to this time the General Mining Association commenced to extract pillars at about the 800-ft. cover line, and a large section of the south side was left in bad condition, as the pillars had been drawn back too close to the haulage and traveling roads. The effect of this practice is still evident, and at many places on the working deeps men are constantly employed retimbering and lifting bottom. Evidences of "crush" are visible in many localities on the new main haulageway through the old workings, and the consequent necessary upkeep of roads is a large item in the cost.

The new development from the old barrier into outside territory is reached by four deeps, driven parallel with the new main haulageway, which is approximately on the pitch. These deeps are 10 ft. wide inside the timbering. Pillars 100 ft. thick are left between them, the crosscuts in deep pillars being 100 ft. apart. A 300-ft. barrier pillar is left on each side of these deeps. Levels are broken off north and south every 1,400 ft. All pillars in working districts are 70 ft. and rooms 18 ft. wide. As a further protection a barrier pillar 200 ft. thick is left on the low side of the low levels.

MUST MINE PILLARS AS ROOMS ARE COMPLETED

Experience in pillar drawing in this district proves conclusively that under such conditions as obtain in the Princess Colliery, with a cover of 1,000 ft. or more and a roof of the nature so far encountered, some method must be adopted whereby pillars can be removed simultaneously with the advance of the workings. In other words, a panel system similar to that followed in some of the large English collieries must be adopted.

It is quite possible that a longwall system could be adopted that would give good results, and this may be tried later. There are, however, certain objections to longwall, among which may be mentioned a lack of available stowing material and the nature of the roof of this mine.

It might be mentioned in passing that practically the entire roof throughout the area covered one year ago by a certain district in this mine where the cover is about 1,100 ft. is down completely today. To recover pillars in this area will cost as much now as it would to reclaim them in much older workings. In view of the above it would be well at this point to mention the timbering. It is sufficient, possibly, to say that a stick of timber was used for each ton of coal, as against one stick for three tons at Florence Colliery, though this plant is mining the same coal bed and is distant only two

miles north. At that mine, however, the cover is only 700 ft. thick.

This is not said to give the impression that the difference in cover alluded to is altogether responsible for the difference in condition existing at these two mines. Undoubtedly the roof in Princess Colliery, on the whole, is not as good as it is at Florence.

PLAN FOR RAPID DRAWING OF ROOM PILLARS

The experiment of drawing pillars almost simultaneously with the advance of the rooms is now under way in No. 10 district south. This will be done by the following method: The lift is to be split—that is, another pair of levels will be driven 600 ft. to the rise of No. 10. Headways or room entries will be carried up every 200 ft., rooms to be 16 ft. and pillars 30 ft. wide. When the upper rooms have been driven 200 ft. in both directions, pillar extraction will begin and follow along behind the rooms.

The inside head, of course, always will be a straight line of crosscuts, and when the pillars have been extracted up to the working headway, the track will be shifted to some road further in, and so on. Of course, the necessary pillars will be left to protect the level. If this method can be successfully pursued the result will be a great saving in day labor, with a maximum tonnage from the area involved.

The words "successfully pursued" are used advisedly, for it is difficult to foresee how any method of working in the deep section of this colliery will make much difference to the action of the bottom and roof, particularly the bottom. It is my understanding that a 70-ft. pillar to an 18-ft. room is the greatest proportion of pillar to room adopted in Cape Breton. Notwithstanding this where cover is 1,000 ft. or over, the bottom (which is fireclay weathering to a semi-plastic state) squeezes up, and this seems to occur with almost any proportion of pillar to room. To lift this heaving bottom accelerates its movement, and there are places completely filled by this upheaval from bottom to top. On the whole it is best not to touch it, but to gain any required height by brushing the roof.

LIMIT OF ENGINE-PLANE HAULAGE REACHED

At present the coal is hauled from the new deep by an engine-plane operating trips of forty cars to a point about 9,400 ft. from the pit bottom. The coal from the lower levels is brought to this point, a further distance of 3,000 ft., by an auxiliary plane operated by an air-driven engine.

It is interesting to note here that an engine plane can be operated over a distance of 9,400 ft. under the

conditions here obtaining, namely, 8,000 ft. of 8 per cent, and 1,400 ft. of 6.5 per cent grade, the road being straight. I believe this distance may serve as an example of the "ultimate" that may be accomplished by this system of haulage for similar conditions, and from it possible conclusions may be drawn by anyone who contemplates installing an engine plane on haulageways having a similar pitch.

In other words, the best that could be done with such a plane in this case was to get forty empty mine cars weighing 1,000 lb. each to drag a 1-in. rope for a distance of 9,400 ft., the first 8,000 ft. falling 8 ft. per 100 and the last 1,400 ft. falling 6.5 ft. per 100. In order to accomplish this result special care was exercised in providing rollers as wide as the road would permit and spacing them at 50-ft. centers. These rollers are constantly watched in order that they may function properly at all times. One of the most important essentials in a long engine plane is to keep the rope from dragging on the roadbed.

Coal from the pillar sections is transported by an endless-haulage system operating on the old south deeps and forming a loop about $3\frac{1}{2}$ miles in length. It is proposed to handle the coal from the new deep districts from face to pit bottom by endless haulage on the new road, a distance of 12,000 ft. The haulage engine will be motor-driven and installed in the pit at the head of the deep and in line with the road.

SOME OF THE AIR TRAVELS ABOUT SEVEN MILES

Ventilating the Princess Pit forms an interesting problem. The deep workings are almost $2\frac{1}{2}$ miles from the downcast shaft, and the fan is 3,600 ft. further to the rise. At present two intakes and two returns are available with a total cross-sectional area of about 100 sq.ft. each way. The loss in air due to short-circuiting is heavy, and the present workings have reached a point where a change in the system of ventilation has become necessary. Much of the loss due to short-circuiting of the current cannot be avoided, for 8,000 ft. of the airways pass through the old workings, which have fallen in, or are at various points in process of crushing.

The old stoppings of brick and stone faced with mortar all the way from the pit to the barrier are intact as far as they themselves are concerned, but innumerable falls have occurred both above and below them, making it difficult, if not impossible, to prevent a leak-

age of air through the shattered roof. In many places it is impossible to find the stoppings, as they are hidden by fallen material and by the stowing of the clay which had to be gobbled when the bottom was lifted. Although an examination of these blinded crosscuts and room-ends, in which stoppings are built, does not reveal any perceptible short-circuiting of air, undoubtedly loss occurs in many such places. Under these circumstances it is an interesting problem, considering the expense involved, to determine just how far to go in order to remedy the difficulty.

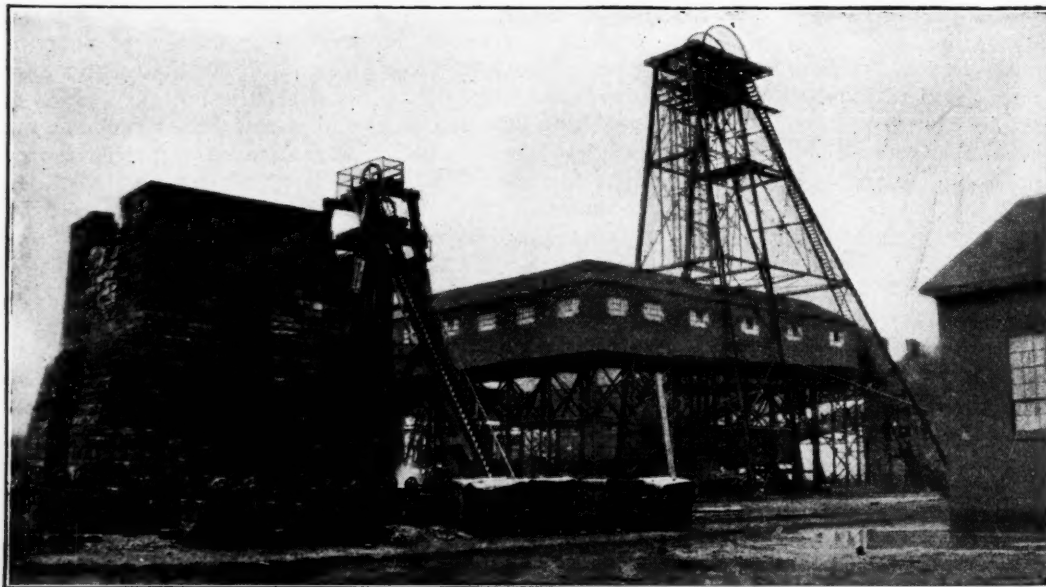
LOSS OF AIR THIRTY-ONE PER CENT OF INTAKE

Mr. Tonge in a paper read before the Manchester Geological and Mining Society in 1906 speaks of a case where 105,000 cu.ft. of air per minute delivered at the fan resulted in only 73,000 cu.ft. per minute reaching the working districts, thus showing a loss of 31 per cent. Nine thousand eight hundred cubic feet per minute were accounted for as being unavoidably lost at certain doors, but the balance of the loss, 23,000 cu.ft., could not be found, although, as he puts it, "a diligent hunt was made for it."

He does not state the water gage under which the above discrepancy occurred but says that, assuming a 20-per cent air loss with a 1-in. water gage, one of 44 per cent could be expected with a 5-in. water gage. Considering the unavoidable loss in Princess Colliery arising from the abnormally high water gage required to give the necessary air, it would seem advisable to attempt to ventilate this colliery by means of underground booster fans in series, operated, of course, in conjunction with a surface installation.

With workings situated as far from the airshafts as are those at Princess and with intake and return airways of limited cross section, no other remedy seems feasible if the required volume is to be obtained at a pressure sufficiently low to insure against abnormal leakage and other consequent difficulties that doubtless would appear. The nature of such an installation will be more or less new to Cape Breton mines, but this method has been resorted to elsewhere, as at the Hulton Collieries, England, where three underground units, operating in series through one downcast and one up-cast, shaft supply air to the workings.

The pumping problem at Princess Colliery is comparatively simple. The old workings to the dip from the



Mine Shafts

On the left are the remains of the old Cornish pump tower, of which about one-third has been removed. The cylinder of the pump was 6 ft. in diameter and 10 ft. long and made 12 complete strokes per min., the steam pressure being 20 lb. per sq.in. On the right is the main shaft and in the center the man hoist.



COAL-CAR EQUIPMENT OF SYDNEY & LOUISBURG R.R. IN YARDS OF PRINCESS COLLIERY
These cars are of the type formerly used in the anthracite region of Pennsylvania

shaft are practically dry and what little water is made from the pit to the face is handled by six small pumps, lifting about fifty gallons per minute from one to the other and discharging into the sump at the bottom. At this point a Jeansville pump with a capacity of 500 gallons per minute is located.

This pump was installed in 1902, taking the place of the original Cornish pumping plant erected when the

shaft was sunk. It discharges about 300,000 gallons during a 14-hour shift. Most of the water comes through the barrier from the Old Queen Pit workings, but some, as stated, is pumped to the sump from the workings below. A duplicate motor-driven installation is now under consideration to take the place of the Jeansville pump, the cost of maintenance of which is becoming heavy.

Outbursts of Methane and Carbon Dioxide in Coal Mines And the Conditions Under Which They Occur*

Firedamp in Great Britain and Carbon Dioxide in Central France and Southern Silesia Cause Violent Outbursts — Coal Adsorbs Large Quantities of Gas and When Activated by Natural Causes Adsorbs More

BY HENRY BRIGGS†
Edinburgh, Scotland

AS IS GENERALLY KNOWN, the highly-contorted seams of the Mons basin in Belgium have been for many years unusually liable to sudden outbursts of firedamp, which invariably come from the solid coal, and have occasionally been of great magnitude. During the thirty years from 1869 to 1898, comprising 9,000 working days, Belgium had no less than 237 of these outbursts.

In Great Britain firedamp has been the only gas these outbursts have emitted; but in the Gard district of France and in the area lying between Waldenberg and Neurode, in Lower Silesia, numerous irruptions of carbon dioxide have occurred. The largest outburst in any mine was one of carbon dioxide; it occurred in July, 1907, at the Nord d'Alais Colliery, Gard, during the preliminary development of a thick seam.

James Ashworth has described a firedamp outburst which, having regard to the amount of coal projected from the face, was of magnitude but little inferior to the instance just cited. It took place in November, 1904, at the Morrissey Colliery, in British Columbia, causing fourteen deaths and the closing of the mine. Another large scale firedamp irruption occurred in 1879

at the Agrappe Colliery, Belgium—a mine notorious for sudden outbursts—when more than 12,000,000 cu.ft. of gas was discharged and 121 lives were lost. In a number of outbursts which occurred at the Bessèges mines prior to 1892 the firedamp was accompanied by sulphureted hydrogen—an extremely unusual feature. While sinking through Permian strata a great outrush took place in Saxony, in 1875, at a depth of 1,659 ft.; the gas on that occasion was blackdamp (nitrogen plus carbon dioxide) mixed with a small proportion of firedamp.

With the exception of the last-mentioned instance, those cited were all of the kind in which the gas bursts out from the coal itself. There is another kind of irruption of an entirely different character, where large volumes of firedamp are suddenly flung into the workings from the floor or roof. A typical example was the outbursts that occurred at the Strafford Main Colliery, Barnsley, England, in 1867, where the Silkstone seam, 6 ft. thick, was being worked at a depth of 720 ft. There were similar outbursts in the same pit in 1870 and 1877. The stratum immediately under the seam, and for 22 ft. below it, was of extremely hard rock. Those below it were softer. A borehole sunk into the floor of the mine did not meet gas until it had reached a depth of 35 ft.; below that several gassy beds were

*Abstract of article entitled "Characteristics of Outbursts in Mines," read before Institution of Mining Engineers, London, June 9, 1921.

†Professor, mining department, Heriot-Watt College.

encountered. W. H. Chambers described a series of five outbursts in the same seam at the Thorncliffe Colliery; in each case the blasts were accompanied by heavy weight on the coal, and for a distance of 60 yds. the floor was thrust up at and parallel to a longwall face. J. Willen and R. Miller also relate how, in 1876, at the New Oaks Colliery a great outrush of gas occurred from a large fracture in the floor. Another irruption from the floor was that in 1889 which occurred between a nip-out and a fault in the Haigh Moor seam, Whit wood Colliery, and at a depth of 885 ft., the gas apparently coming from a thin seam below. Many cases are on record where gas in large volume has blown out in similar fashion from the roof, usually after exceptional weight on the coal had been experienced.

The cause of an outburst from the floor or roof is not far to seek. Given a stratum near the seam holding great volumes of gas under pressure and separated from the seam by an impervious bed which is not readily fractured, the conditions are suitable for such an outburst. The longwall method, especially when faces are kept straight and packing material is scanty, is apt to encourage the formation of these big "gas blisters." The best known precautionary measure is to prick the blister by boring into the pavement or roof, as the case may be. Where gas is apt to collect in blisters in the roof, and the top coal is unmined, the latter can be kept up only with great difficulty until the gas is drained off by boreholes; then the roof becomes sound.

EXPLANATION OF OUTBURSTS FROM SOLID COAL

A few of the greatest outbursts of this kind have already been mentioned. I propose in this section to look more closely into the circumstances of these discharges, and, as immensity tends rather to paralyze than to assist inquiry, it has been considered preferable to devote attention to occurrences on a more moderate scale. Their characteristics are best dealt with under heads, thus:

The Cavity Theory.—It seems certain, despite allusions here and there to "cavities of gas in the coal" and the old miner's expression "bags of gas," that in no British outburst from the solid of which we have record has there been in the seam anything of the nature of an open cavity holding gas under pressure; the gas is contained in the coal. That open cavities may possibly exist in shallow seams, however, is clear from the observations of E. A. Simcock, who found open pockets some 20 ft. in length, containing gas under pressure in a thick seam in Upper Assam, British India, at a depth of 120 ft.

Physical Character of Coal Ejected.—In the kind of outburst now dealt with, coal is blown out with the gas. In almost every case the ejected coal has been found to be in a fine state of division, a proportion of it being excessively fine dust. No doubt where these outbursts occur the coal must be soft, and the particles must form a loose aggregate, or, in other words, must be in a fine state of division prior to and not merely as a result of the outburst, the pulverization being, in fact, a cause and not an effect of the irruption.

Where these outbursts occur the coal invariably is very dry. What appeared at first sight to be an exception to this rule was the Bedford Colliery outburst of March, 1918.* It occurred at a depth of 1,500 ft. in

a heading that had been driven in the Trencherbone seam. Water with gas was first observed to issue from the floor; then there was a violent blast from the center of the face; 26 long cwt. of extremely fine coal were shot out, leaving a cavity 8 ft. x 3 ft. x 3 ft. Gas and water continued to pour out of the cavity for a long time after the outburst. The coal and dust discharged from the opening, however, were quite dry.

Geological Conditions.—Another important characteristic of these occurrences is that they usually are associated with faults or other disturbances of the strata. At Ponthenry† the irruptions occurred after driving through a "want" and upon entering the thickened seam bordering the want. Geologically the circumstances were remarkable. There was a similar outburst in the same area of disturbed ground on Nov. 20, 1920.

Change of Temperature.—When compressed gas suddenly expands, performing much external work, a drop in temperature inevitably results. The escaping gas in an outburst has to overcome the resistance of the atmosphere and give kinetic energy to the extruded coal, and such a lowering of temperature should be experienced. This effect indeed has been recorded in Lower Silesia, when sudden outrushes of carbon dioxide occur, the temperature change being noticeable in the surrounding coal.

At Ponthenry the ejected material was found during removal to be warm—not cold. The heating cannot have been a direct effect of the outburst, and—although the material was anthracite—appears to have been due to oxidation. This view is supported by the fact that, according to the tests of C. A. Seyler, the gas subsequently found to be occluded in the soft material contained nearly 63 per cent of carbon dioxide, though that extracted from the normal anthracite of the seam contained only 6.4 per cent of that gas.

OUTBURSTS USUALLY OCCUR IN NARROWER WORK

Effect of Mode of Working.—Almost without exception, outbursts of gas from the solid have occurred either when driving winning headings (room entries) or when "working in the whole" in bord-and-pillar mines (extending rooms). Experience indicates that the best precautionary measure in seams liable to these accidents is to work advancing longwall and to avoid pushing the faces forward too quickly. A wide, straight face advancing slowly gives a chance for the gas to drain quietly from the coal; it goes a long way toward obviating the creation of a dangerously steep pressure gradient in the coal immediately in front of the face.

So far as this particular risk is concerned, hand-cutting becomes safer than machine-cutting, and in some Continental mines prone to these outbursts coal-cutting machines are prohibited; they carry the face forward too rapidly. A regular discharge of gas from a face is a sign of safety, and a cessation of that discharge is an indication of danger.

As is generally known, advance boring is often resorted to in seams of this kind, although there are several cases in which that process has yielded disappointing results; in faulty ground, however, it is advisable to riddle the face with boreholes.

Explosions Following Upon Outbursts.—Outbursts of firedamp have seldom been followed by ignition of the gas, especially since the ventilating furnace has become

*See also "Instantaneous Outbursts of Coal and Gas at Bedford Collieries, Leigh," by F. N. Siddall (Proceedings of the Institution of Mining Engineers, 1917-1918, vol. lv., p. 210).

†See also "Notes on Outbursts of Gas and Dust at the Ponthenry Colliery," by George Roblings (Proceedings of the South Wales Institute of Engineers, 1921, vol. xxxvi., p. 423).

obsolete. Paradoxically enough, the bigger outbursts are safer in this respect than the smaller ones, because with the former the expulsion of gas and dust is so violent that all flame lamps in the district are at once extinguished. At Ponthenry and in other cases every lamp in the seam was put out by the concussion. In the majority of the fatal accidents from gas outbursts that have occurred in this country the victims have either been smothered by fine coal or have succumbed from lack of oxygen.

C. A. Seyler made ultimate analyses of the material ejected at the first Ponthenry outburst (February, 1920) and of the normal anthracite of the seam. Thanks to G. Roblings, I am able to quote the results, which are as in Table I.

TABLE I. COMPARISON OF NORMAL AND OUTBURST COAL TAKEN AFTER FIRST OUTBURST

	Normal Anthracite (Dried), Per Cent	Outburst Coal (Dried), Per Cent
Carbon.....	89.95	90.49
Hydrogen.....	3.20	3.18
Oxygen plus nitrogen.....	1.82	2.72
Mineral matter.....	5.03	3.61
Total.....	100.00	100.00

The difference between the two analyses is considerable. A like result was obtained when a similar comparison was made in connection with the Shelton Colliery outbursts.

Dr. R. Lessing has been kind enough to undertake, for the purposes of this paper, the chemical examination of the material from the second (November) Ponthenry outburst. As the proximate analyses in Table II show, the proportion of ash in the outburst material was much greater than that from the normal anthracite of the seam.

TABLE II. COMPARISON OF NORMAL AND OUTBURST COAL TAKEN AFTER SECOND OUTBURST

	Normal Anthracite, Per Cent	Coal from Outburst, Per Cent
Moisture.....	1.34	1.30
Volatile matter (excluding moisture).....	6.12	6.16
Fixed carbon.....	90.28	83.70
Ash.....	2.26	8.84
	100.00	100.00
Nitrogen.....	1.09	1.02
Color of ash.....	Chocolate brown with large white patches	Light maroon with large white particles

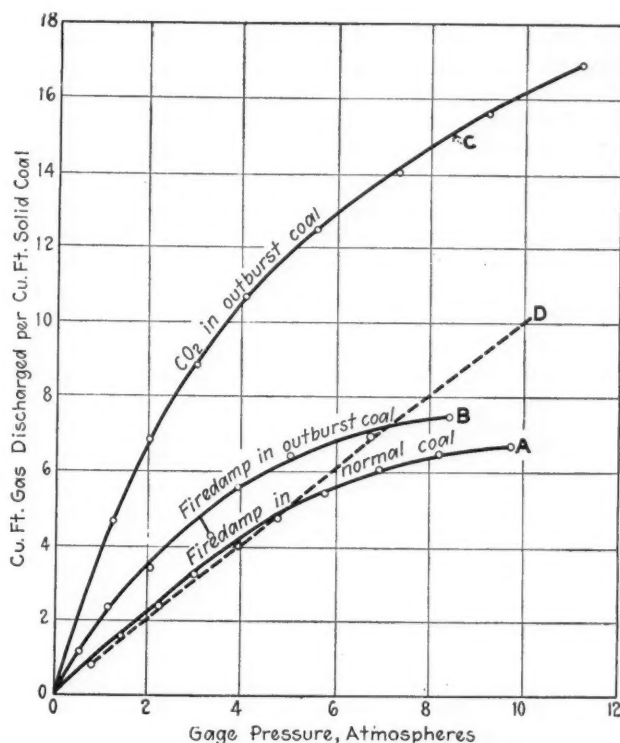
Except in ash percentage, the two samples were, chemically speaking, almost identical.

Dr. Lessing proceeded to investigate the nature of the incombustible matter in the two coals. He also immersed ground samples of the coals in a liquid of 1.5 specific gravity, and examined the ashes of the "float" and "sink" portions. He observed that the ashes of the "float" fractions were much alike, consisting to a large extent of highly ferruginous particles of web-like structure similar to the ash of vitrain and clarain. The following conclusions may be drawn from Dr. Lessing's work:

(1) The larger part of the combustible matter in the outburst material had been increased in density, or, in other words, a greater percentage of the coal sinks in a liquid of 1.5 specific gravity than would sink when normal coal is tested.

(2) The substance of higher density that was introduced into the outburst coal occurred mainly in particles of relatively large size, a fact indicating that the invading substance was mixed in by mechanical action rather than carried there in solution.

(3) The ash of the "sink" fraction of the outburst



GAS ADSORBED UNDER PRESSURE BY PONTHENRY COAL

Outburst coal from Ponthenry coal will adsorb about twice as much carbonic dioxide as methane at eight atmospheres pressure. It will hold more methane than will the normal coal, but not quite as much as the open space would contain.

coal—the part which contains most of this invading substance—was high in substances insoluble in acid, was high in silica, and comparatively low in iron.

Mr. Roblings observes that the soft 3-in. "rashing" (bone coal) which usually separated the top and bottom coals was not present at the seat of the outburst, and that it had apparently been mixed up with the soft coal. The bone and possibly the fireclay of the floor of the seam appear to have been churned up with the coal. This would explain both the increased ash percentage and the chemical character of the ash as revealed by Dr. Lessing's examination.

DO ADSORPTION THEORIES HELP TO EXPLAIN?

From the physical point of view, outbursts of firedamp or carbon dioxide from the solid coal constitute a problem in gaseous adsorption. Recent study of this subject, particularly that of the last two years, has added much to our knowledge of its mechanism; it is now known, for example, that the attraction exercised by a surface of coconut charcoal, such as that used for box respirators, is so intense that the gas molecules are drawn to it and packed upon it under a pressure of about 10,000 atmospheres.

This adsorbed layer of gas is excessively thin, but with a well activated charcoal the area of molecules of the solid (or, more properly speaking, of the polymers of the solid) which is exposed to gas is so enormous that the charcoal can fix or hold in this way several times its own volume of a gas like nitrogen or firedamp, even at ordinary atmospheric pressure.

In 1916 J. Ivon Graham read before this institution a paper dealing with the solubility of gases in coal.* He experimented with methane, carbon dioxide, nitrogen and hydrogen, and showed, among other matters, that

*"The Permeability of Coal to Air or Gas, and the Solubilities of Different Gases in Coal," by J. Ivon Graham (Proceedings of the Institution of Mining Engineers, 1916-1917, vol. III., p. 338).

coal, even at 30 deg. C., may adsorb at atmospheric pressure more than three times its volume of methane. Although not pursuing the inquiry at higher pressures, he was, I believe, the first to obtain definite quantitative evidence of the immense capacity of dry coal for gas, and especially for an easily condensable gas such as carbon dioxide. In the discussion of that paper Dr. Haldane pointed out how this latter fact went a long way toward explaining the outbursts of carbonic acid in French collieries.

It was discovered during the war that coal, like charcoal, can be "activated"—that is to say, its adsorptive power can be greatly increased by artificial means—and toward the end of the year an activated Pennsylvania anthracite ("bachite") was produced, and was one of the materials used for anti-gas purposes by the United States Government. In this country a briquetted mixture of a charcoal dust and a coal dust was manufactured for the same purpose. It is unnecessary here to discuss the processes of activation; it is sufficient to say that in the cases of charcoal or colloidal silica they appear to do nothing more than disrupt the elaborate polymers from which these substances are built up, and so create a wider expanse of surface and a greater development of passages of molar dimensions available to the gas.*

The artificial activation of coal involves, in addition, the driving off of all volatile ingredients—a process which opens vents of microscopic and ultramicroscopic size, and by so doing reduces the resistance to the passage of a gas into or out of the material. In this connection, however, it must be observed that the soft coal from the second Ponthenry outbursts although, as will soon be seen, showing signs of partial activation, does not contain less volatile matter than the normal anthracite of the seam.

TEST SHOWS GAS CAPACITY OF OUTBURST COAL

To study the problem experimentally, a steel gas cylinder of 1.2 liters water capacity was filled with dried outburst coal, which was well shaken down within. The weight of coal introduced was noted. A stop cock was then screwed and soldered into the cylinder neck, a small plug of asbestos wool being first placed in the neck under the cock to prevent coal dust from being blown out. The cylinder was then charged with compressed dry firedamp, so as to restore, as nearly as possible, the material to the state in which it existed before the outburst. The firedamp was obtained from South Wales; its contents of methane (almost 98 per cent) is much the same as that of the firedamp of the Pumpquart seam at Ponthenry, which on analysis showed 98.8 per cent of methane.

A throttle valve provided with a pressure gage was screwed to the cylinder. The latter was placed in a vessel of water to keep it at uniform temperature (15 deg. C.), and the gas was allowed to flow slowly out through a meter. The gage and meter were carefully tested beforehand. From time to time the flow was stopped, a short interval was allowed to elapse, and the gage reading was taken.

It will be clear that gas discharged in this way will come in part from the coal and in part from the interstices existing between the particles of coal; it also is obvious that when the coal was in place in the mine no such open interstices existed; their influence had, there-

fore, to be eliminated. A number of determinations were made of the specific gravity (1.50) of the material;† this figure enabled the actual volume of the solid material in the cylinder to be found, and the difference between the volume of the cylinder and that of solid coal gave the interstitial space. It proved to be 37 per cent of the total volume.

As the gas expanded from that space in accordance with Boyle's law, it was an easy matter to correct the volume of gas discharged for the amount extruded from the interstitial space. The results were then set down in graphical form (curve *B* in the accompanying graph), so as to indicate the relationship between the gage pressure in atmospheres and the volume of firedamp (at normal pressure and 15 deg. C.) discharged by 1 cu.ft. of solid coal. The experiment was repeated, using carbon dioxide (see curve *C* in the same graph).

A quantity of the normal anthracite was then ground to a state resembling that of the outburst coal; it was dried and placed in the cylinder, and the test again carried out with firedamp (see curve *A*). The line *D* expresses the relation between pressure and volume of gas discharged from an open space of 1 cu.ft.

OUTBURST COAL PROVED TO HAVE BEEN ACTIVATED

The graph shows the outburst coal to be, per unit volume, a better adsorbent of firedamp than the normal anthracite of the seam. Apparently for the first time we meet here with a substance that has undergone a natural process of activation to a small though definite extent. Whether this feature is peculiar to the Ponthenry coal or whether it is the rule with such ejected material can be settled only by examining the coal blown out in many other such outbursts.

Curve *B* also shows that with pressures up to seven atmospheres the outburst coal held, ready for almost instantaneous discharge when the pressure was relieved, a quantity of gas greater than would have been held by an open cavity of the same volume.

Though, unfortunately, we do not know the pressure at which gas exists in the solid coal at Ponthenry, a rough estimate of the volume of gas blown out at the first outburst may be made if we may assume that that pressure probably lies somewhere between four and eight atmospheres. This outburst threw out or disturbed 280 tons of coal, which would have a volume of about 7,200 cu.ft. in place. An open cavity of that size would have released 57,600, 43,200 and 28,800 cu.ft. of gas on a fall of pressure to zero (gage) from eight, six and four atmospheres respectively. Containing, as the pocket did, the soft coal of the outburst, it will be found from line *B* of Fig. 1 that the gas volumes shown in Table III would be emitted at the pressures stated.

TABLE III. FIREDAMP RELEASED FROM 280 TONS OF PONTHENRY COAL

Gage-Pressure, Atmospheres	Volume Released,* Cu.Ft.
4	40,320
6	48,390
8	53,570

*Measured at 15 deg. C.

If the conditions had been those of the French and Silesian collieries where carbon dioxide is discharged, the coal would have held a much greater volume of gas (see curve *C*), amounting, in fact, to about 107,000 cu.ft. at eight atmospheres and 77,800 cu.ft. at

*"Adsorption of Gas by Charcoal, Silica and Other Substances," by H. Briggs; Proceedings of the Royal Society, A, 1921 (in course of publication).

†If the coal had been a more active adsorbent, the determination of density by the usual method of water immersion would have been liable to considerable error, owing to the fact that in that case the water is intensely compressed in the thin layers in actual contact with the solid.

four atmospheres. The greater adsorption of carbon dioxide is due mainly to its critical temperature being above that of the mine, while that of methane is much lower. Hence the coal is able, by the pressure of adsorption, to liquefy (and then still further compress) the carbon dioxide in the thin films which lie in actual contact with the molecules of the solid; but methane at 15 deg. C. is incapable of liquefaction in this way.

It is important that the coal ejected by these outbursts from the solid be dry. The adsorptive power of coal—or charcoal, for that matter—is greatly reduced by the presence of moisture; so much so, indeed, that bursts of that kind are not to be feared in seams in which water exudes with gas at the face. The entry of water for the first time into a virgin seam containing gas adsorbed under pressure, an effect which may result from the working of a neighboring seam, would bring about an evolution of gas, and, unless there were channels of relief, an increase in the pressure of gas in the seam, a fact which may have a bearing upon

the problem of sudden outbursts from floor and roof.

To sum up, sudden outbursts of gas and coal from the solid are due to the co-existence of four factors, namely: The presence of gas under considerable pressure, the presence of a mass of disintegrated coal which is loose enough to move under a sudden relief of pressure and to set free almost instantaneously the greater part of the gas adsorbed in it, the absence of water in the soft coal, and the employment of a method of working which affords little opportunity for the gas to drain quietly from the soft coal; or, as an alternative to the last, the presence in the seam, and surrounding a soft zone, of ribs of low permeability which prevent or interfere with that drainage. It also has been shown that in the instance closely studied the phenomenon of "activation" played a part in increasing the volume of gas adsorbed by the loose coal. Activation, however, is not an essential factor, as normal coal can adsorb sufficient gas to cause outbursts if favoring conditions obtain.

Circuit Breaker That Not Only Protects the Motor But Affords Safety to the Operator Also

Blowing Point of Fuses Is Lowered by Progressive Oxidation—Circuit Breakers Operate Under Time and Current Conditions for Which They Are Set—Switches Boxed—It Can Be Closed Without Opening Box

FOR years mining electrical engineers have indulged in much talk and controversy concerning the relative merits of the knife switch and fuses on the one hand and the circuit breaker on the other as a means for protecting from overload not only the motor but also the equipment driven by it. Though the fuse

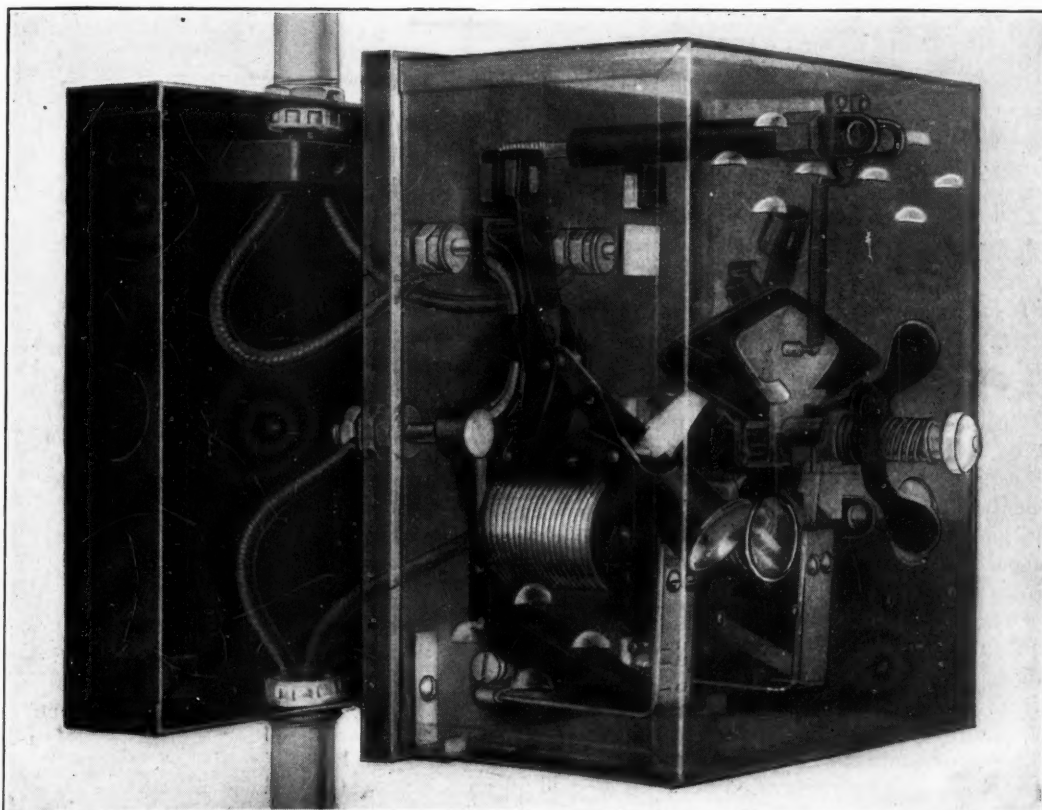
unquestionably is cheaper in first cost, its frequent failure, with consequent loss of production while renewal is being made, is a source of continued expense, the magnitude of which often becomes large.

Furthermore, a fuse is liable to "age"—that is, if the current it normally carries is sufficiently large to

FIG. 1

X-Ray View of Circuit Breaker

This unit is practically dual in that it virtually embodies two breakers. The diamond-shaped piece of insulating material attached to the operating handle closes first one contact, then the other. In reclosing if an overload or short exists on the circuit served, the contacts cannot be closed simultaneously and the one first closed will come out as soon as the other allows the passage of current.



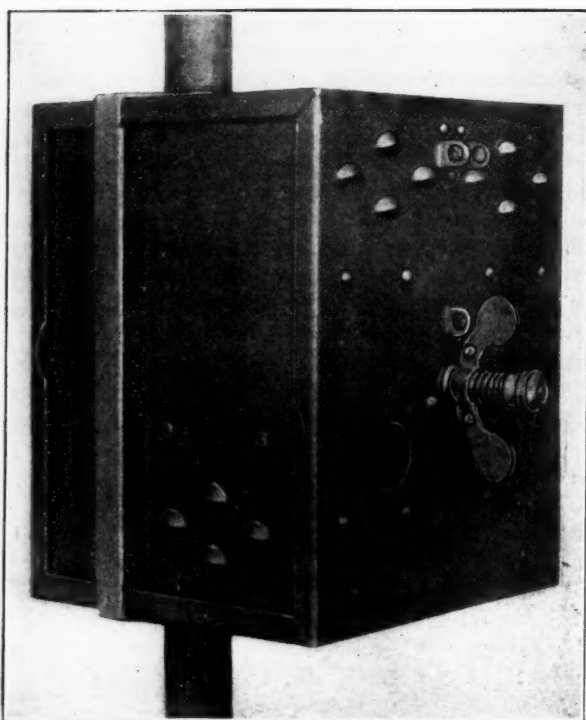


FIG. 2. EXTERIOR OF THE SMALL CIRCUIT BREAKER

All mechanism except the operating handle is enclosed within a substantial steel box. It is impossible, therefore, for the operator to come in contact with any live part.

keep it hot, it oxidizes and as a result its blowing point changes, lowering with the lapse of time.

Where a motor is protected by fuses, their frequent blowing presents the temptation to substitute either a fuse of larger capacity or to bridge the fuse block with a piece of wire, a nail or some similar conductor. Both practices are highly pernicious, the latter of course more than the former, for in either case the motor or circuit supposedly protected can draw more current from the line than it is built to carry.

NOT REALLY COSTLY AND MADE ENTIRELY SAFE

In the past the chief objection to the circuit breaker has been its initial cost. As circuit breakers last indefinitely the first cost of such apparatus is its only expense.

Another objection, however, has been that the closing of the ordinary exposed circuit breaker presents a hazard of the same character and magnitude as that involved in the throwing of an unenclosed knife switch. In other words, manipulation of such a device is an operation which though by no means dangerous to the continuously careful attendant requires at least a measure of caution if shocks and the possibility of personal injury are to be entirely avoided.

In order to remove all danger to the operator and to give still better protection to the motor, the Cutter Electrical & Manufacturing Co., of Philadelphia, Pa., has developed and is now marketing the U-re-lite. This is a circuit breaker enclosed in a steel case with an especially designed insulated operating handle projecting from the front of the cover.

The U-re-lite Junior (Figs. 1 and 2) is equally efficient on direct current not exceeding 250 volts and on single-phase alternating current. It is made in sizes ranging from 2 to 60 amp. inclusive and can easily be adjusted to operate at any tripping point over a wide range. Thus, for instance, the 60-amp. instrument may be set to trip at any current value between 40 and 90 amp.

The U-re-lite Senior is built in all sizes ranging from 5 to 200 amp. and is serviceable on the voltages mentioned above. It may be equipped with special features, such as the time lag, no voltage or shunt trip. Each of the above instruments is in reality two single-pole inverse-time-element, circuit breakers enclosed in a steel box so designed that it is impossible to close both poles simultaneously. This renders the device non-closable on overload. Furthermore, it is impossible for any unauthorized person to block this instrument or to change its armature setting.

The Auto U-re-lite (Figs. 3 and 4) is designed for 3-phase alternating current work. It is a 3-pole breaker so designed that all three poles may be closed simultaneously if no overload exists on the line. Should an overload be present, however, the instrument will instantly trip independently of the handle. This breaker may also be equipped with the special features mentioned in connection with the second circuit breaker described.

Safety is effected by mounting the circuit breaker proper within a sheet-steel case and making the closing mechanism operative from the front of the cover. This construction, together with a suitable insulating element embodied in the closing lever, renders it impossible for anyone to come into contact with any of the live parts. When the breaker trips out it may be closed by simply



FIG. 3. THREE-PHASE BREAKER WITH BOX OPEN

Manual operation of this instrument is exactly similar to that of the one designed for direct- or single-phase current. Three phases are, however, carried instead of one.

turning the handle first to the left, then to the right. Its manipulation is so simple and safe that even a child can operate it with perfect impunity. Movement of the handle as described closes successively the switch ele-

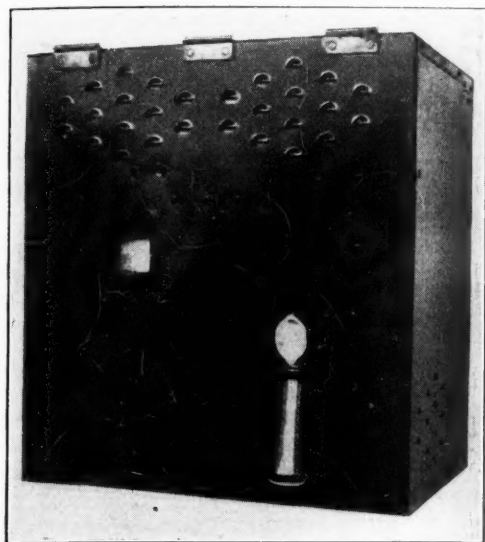


FIG. 4. EXTERIOR OF THREE-PHASE BREAKER

The protecting box is similar to that employed on the single-phase and direct-current instrument. The operating handle in this case is L- instead of T-shaped.

ments, and it is this successive closure which the construction necessitates that renders it impossible to close the instrument against an overload or short-circuit. A push upon the knob on the front of the operating handle of the Junior and Senior instruments opens the breaker instantly. To open the Auto instrument, it is necessary only to turn the handle to the left. Thus any of the devices may be made to take the place of a knife switch and fuses.

Wiring connections to any of these instruments are simply and quickly made. Safety to everything and everyone concerned has been the primary object sought in the design of this breaker. It does not "age." Operation in response to overload is controlled by a scientifically proportioned electro-magnet, which when traversed by a current of predetermined magnitude unfailingly releases the locking mechanism.

The case may be fastened with a padlock, so that no unauthorized persons can tamper with the mechanism inside or alter its adjustment. The same means may be employed also to prevent manipulation of the lever and consequently closure of the contacts when work is being done upon the line which the instrument protects. Practically foolproof in design and of sturdy construction, this instrument is admirably adapted for use wherever air-brake circuit breakers, fuses or knife switches are installed.

Conditioning Renton Mine After Severe Gas Explosion

Apparatus Men Work in Two-Hour Shifts, Preliminary Restoration Men in Shifts of Four Hours—Three Crews of Seventy Men Each Condition Plant for Operation—Rock Piles in Crosscuts Faced with Cement Mortar

BY ALPHONSE F. BROSKY
Pittsburgh, Pa.

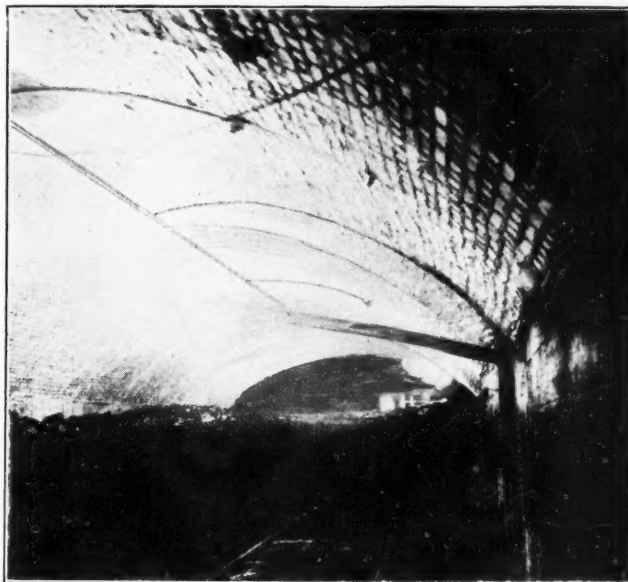
ON THE morning of July 19, 1920, Renton No. 3 mine of the Union Collieries Co., eighteen miles northeast of Pittsburgh, Pa., was the scene of a mine explosion. In this disaster nine men were killed. The underground damage was enormous; in the shafts guides and buntons were ripped loose, and with other damage for a time made hoisting impossible; brattices, overcasts and stoppings were demolished; timbers were dislodged, resulting in serious roof falls, and some of the tracks were torn up. The general conditions underground were in such a chaotic state that long-experienced operating men who viewed the scene said that a clean-up would take from six months to one year.

Yet ten weeks after the explosion, coal was being hoisted from the mine, and today the daily output is greater than that of a year ago. As the company had the full and unfailing confidence of the miners and had all necessary supplies on hand, no unnecessary delays occurred in the reconstruction of the mine.

The relations between the company and its employees have always been of the best. The houses are of good design and are not crowded together, as in many of our mining towns. The well-kept lawns and thriving gardens exemplify the progress made in the Americanization of the foreigners of the mixed population of Renton. Every man is judged by his good qualities and not by his nationality; be he Pole, Hungarian or Italian, no discrimination is made. This determination to disregard ethnic differences was largely responsible

for the good faith of the people after the explosion.

Underground, all the ventilation guides excepting one brattice and three stoppings were blown out—every one of the overcasts was demolished. The explosion



MAIN LANDING LOOKING TOWARD MAIN SHAFT

This brick lining was not damaged by the explosion, though a large fall occurred directly behind this lining at the junction of the east and west turnouts.

doors at the air compartment were shattered. At one place 50 ft. of curtain wall in the air compartment had been blown out. Here and there, throughout the remaining length of this wall, holes had been punched through. In order to restore ventilation, the coal-hoisting shaft was used as a downcast, necessitating the sealing of the smaller shaft. The fan, which fortunately was not damaged, was used as an exhaust.

Air being provided, the next problem was that of restoring the hoisting equipment. No. 1 cage of the main shaft was lowered the first day to within 20 ft. of the bottom, ladders being used temporarily in descending the remaining distance, which was cumbered by four loaded wagons, which were standing in the main haulage at the time of the explosion and had been shot into the sump at the shaft bottom, filling up the fairway. When these were removed the cage was lowered to the bottom. As only one cage was operated at this time, only 12 men were allowed to descend on it at one time, the discovery being made that more than this number overtaxed the hoisting engine. Two men were continually kept on the hand brake. Six weeks after the explosion the shafts had been restored to use.

EXPLORATORY AND PRELIMINARY WORK

Working in advance of the restoration crew were two breathing-apparatus crews which traveled two headings ahead. The advance crews consisted of five men each, and the restoration crew contained twenty men, including a foreman. The former carefully explored the roadways, examined conditions and advised the crew following accordingly. The apparatus men worked in two-hour shifts, the restoration crew working in four-hour shifts. Of the latter, six men set up brattices, and the remaining men carried material. As all

the material had to be carried, the hazards of the work and the difficulties were increased. All this time dangerous falls were occurring; these often took place a few feet in advance or in the rear of the crews. In spite of the dangers encountered, not one man was injured during the restoration work, although several men were overcome by afterdamp. Four canaries died during the exploration work.

OVER 200 MEN WORKED ON FINAL CONDITIONING

After the ventilation was fairly well restored the clean-up crew started to work. Three crews of seventy men each worked in three eight-hour shifts. These clean-up crews included muckers, trackmen, timbermen, linemen and pumpers. Where breaks in the track were found they were quickly repaired by the trackmen. Timbermen replaced dislodged timbers, and were closely followed by the linemen. It was impossible to maintain this order of working at all times, however, as conditions often made a change advisable. These well-organized crews working as by clock-work, together with the abundance of supplies on hand, were largely responsible for such rapid progress. The tracks were little damaged, except for a stretch of four rail lengths in the main haulage, where the track was completely sundered.

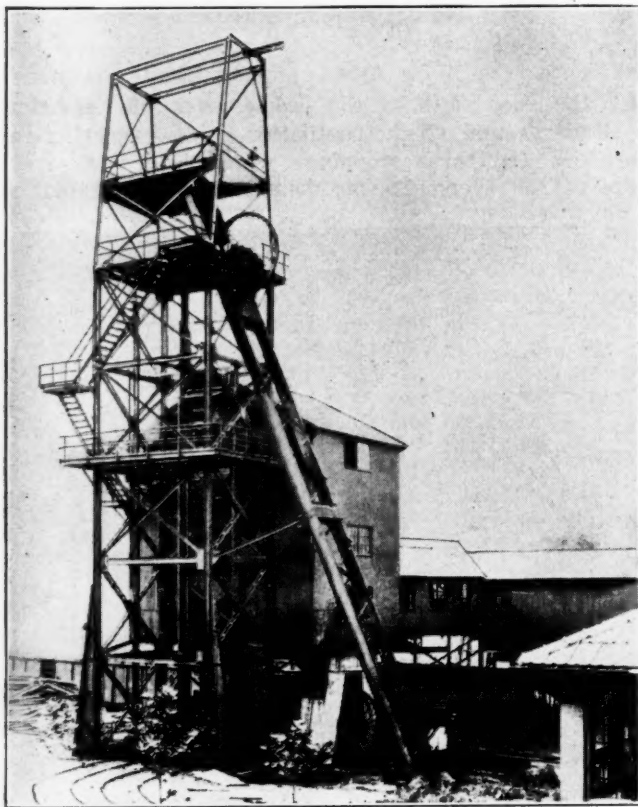
ROCK STOPPINGS FACED BY CEMENT AND SAND

At first the fallen roof rock was removed to crosscuts which had been originally sealed with stoppings. The rock was tightly stowed in these places, in many instances occupying sixty or more feet of their length. In every instance where crosscuts were so filled, one end of these fills was plastered with a rich cement-and-sand mix. At other places stoppings were built of the same material 6 ft. thick and plastered in the same manner.

Many expressed the opinion that this procedure was unwise, thinking that these stoppings would settle and sag. But one year after their completion these stoppings show no signs of disintegration. What rock could not be disposed of in the manner described was hoisted to the surface, about 125 wagons of rock being removed from the mine daily for a period of ten weeks. After this time a smaller quantity of rock was hoisted, as the mining of coal had now begun.

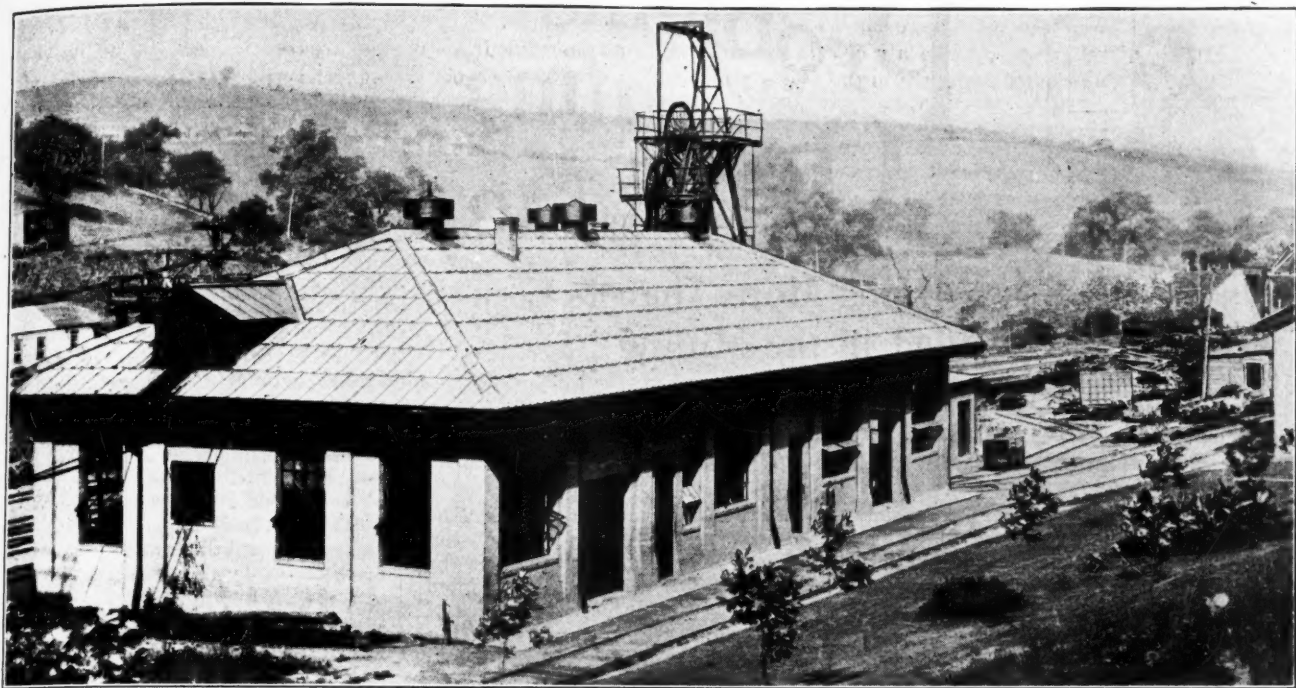
The most severe roof fall occurred on the south end of the shaft bottom. Many thousands of tons of slate were removed from this place, leaving a void of 6 ft. above the usual roof height. Ordinarily, this condition would be considered safe, but as it was close to the cage landing, it was thought advisable to support the roof. Brick pillars 18 in. wide and 7 ft. high were built at 4-ft. centers along the ribs of the affected region. Twelve-inch I-beams were then laid on these supports and 2-in. lagging, capped with tie cribbing and reaching to the roof, completed the work.

About 50 ft. of brick lining with an arched roof runs north, at the end of which are located the east and west turnouts. This lining was not damaged by the blast, though a severe fall took place at the turnout itself. On each side of the main haulage, running parallel to it and across the portals of the turnouts, were placed two 18-in. steel I-beams, supported by massive brick pillars; surmounting and running perpendicular to these large beams were strung 12-in. steel I-beams. The usual 2-in. lagging and tie cribbing were used to support the roof. In other places where the dislodging of timbers had caused severe falls, the roof is now remarkably safe, a



HEADFRAME OF MAIN SHAFT AT RENTON

To provide against delay owing to possible damage of the shaft equipment an extra hoisting sheave and a Lepley cage are kept at the head of the shaft.



RENTON SURFACE PLANT AFTER THE DAMAGE DONE BY EXPLOSION HAD BEEN REPAIRED

white sandstone having been exposed and the heading being well arched. The motor barn was completely demolished, but has since been rebuilt.

Practically little damage was done to the surface plant. Material shot up through the shaft, pierced the tile roofing of the buildings in many places, but the machinery was not damaged. The headframes required a certain amount of adjustment, and the hoisting sheaves, hoisting cable and the like had to be replaced.

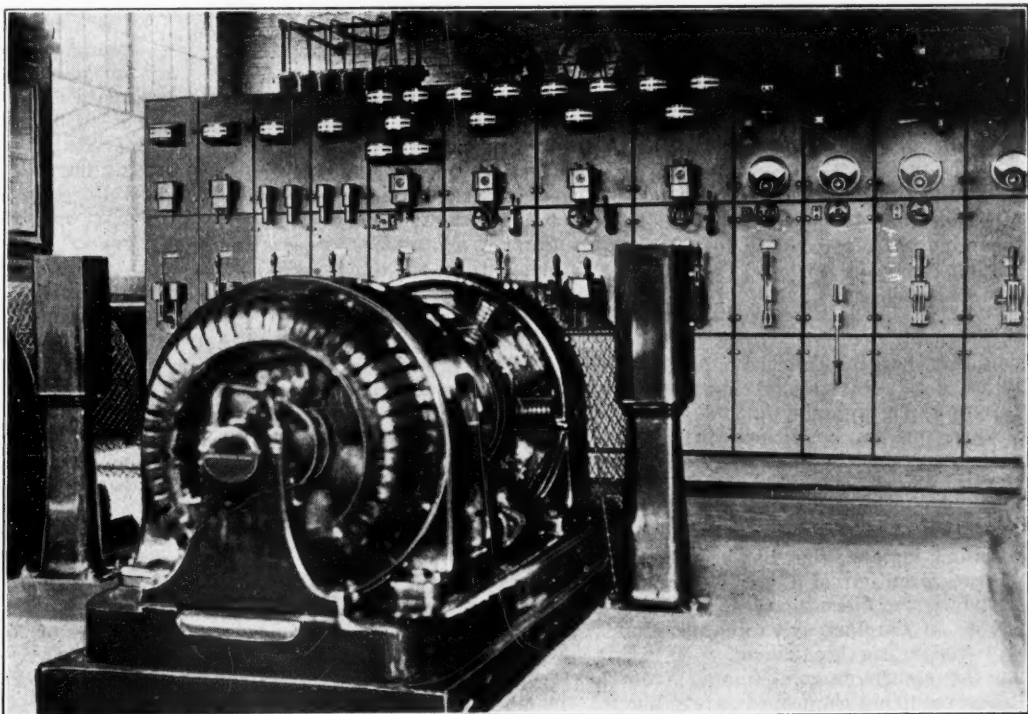
It might be well to give a brief description of a few of the features of the plant as it is today. Coal is hoisted 517 ft. to the surface in two Lepley self-dumping cages, each making a round trip in one minute. The 84-in. Freeport seam in which the mine is working

has a small band of boney in the center. Great care is exercised on the tipples to prevent any impurity from passing to the cars.

Two Marcus screens are installed, only one of which is in use at present, as the tonnage for which the plant is laid out is not yet being produced. The coal as it leaves the hoppers and falls on the screen is sprayed with water. This provision does away with much of the dust usually present about tipples. Five men are employed at the picking table, so that the coal dumped into the railroad cars compares favorably with any unwashed coal in the field. The present daily output of the mine is about 2,300 tons, although the tippie capacity approaches 4,000.

Switch Panel

The power plant has three 435-hp. 60-cycle 2,000-volt synchronous motors and the same number of 250-volt direct-current generators. The switch panel shown is for the direct current, the alternating-current switchboard being immediately behind it. The three spiral coils at the top center of the illustration are lightning arresters.





Problems of Operating Men

Edited by
James T. Beard



Safety Requires Doing More Than Is Commonly Specified in the Mining Law

Not What We Preach but What We Practice Marks the Degree of Safety Attained. Mining Laws Cannot Specify Every Danger. Practice of Safety Is Higher Than the Law

WITH deep interest I have read more than one reference bearing on the requirements of our mining laws in respect to safety in mines. Most astonishing of all, however, is the statement made by Robert A. Marshall, at the close of his letter, *Coal Age*, July 21, p. 101, to the effect that no mine official should be asked to go beyond what is required in the law in making the mine safe.

This statement concludes Mr. Marshall's comments on a previous letter of Oscar H. Jones appearing in the issue for May 26, p. 956, and expressing the opinion that it is the duty of all mine officials to make and enforce regulations that will insure safety in matters not clearly specified in the law.

PREACHING SAFETY OF NO AVAIL UNLESS PRACTICED IN THE MINE

The question of making our mines safer is an important one, in which every employee should be interested. Rules and regulations should be strictly observed and violations promptly punished. It is not what we preach, but what we practice, that will make the mine safe. There is a wide difference between the preaching and the practice of safety.

However widely we may differ on other questions pertaining to mining, there should be full agreement in respect to matters of safety. I heartily agree with the statement of R. W. Lightburn (Jan. 6, p. 22), who says "the question is more one of making the mine safe, regardless of what the mining law requires."

DOING WHAT SAFETY REQUIRES

The same truth is expressed by my neighbor, here in Tennessee, Mr. Jones, in the letter to which I have already referred. In my opinion, to do no more toward making conditions in a mine safe than what is specifically stated in the mining law would not, in many cases, be sufficient to insure the safe operation of the mine.

In one instance that has been brought to the attention of *Coal Age* readers, through the discussion of a doubtful clause in the Pennsylvania bituminous law respecting the use of open lights on the return current coming from a place requiring the use of safety lamps,

the question was raised of whether the fireboss violated the law by permitting the miners working in five rooms on the return airway to use open lights when safety lamps were in use at the face of those headings, which were generating gas in dangerous quantity.

VARYING OPINIONS SHOW LAWS NOT SPECIFIC REGARDING ALL DANGERS

A discussion of that question developed a difference of opinion regarding the violation of the law by the fireboss, although it was generally agreed that it would have been safer had he forbidden the miners to use open lights in those rooms. My opinion is that, setting aside the question of the law and its violation, if the headings were dangerous from having struck gas feeders the same condition would likely occur at any time at the face of one of those rooms.

Speaking of mining laws, specifying clearly all dangers to be encountered in the mine, as referred to by Mr. Marshall (July 21, p. 101), there is danger of interpreting the law in so straight a manner that, like the Indian's tree, we shall lean over the other way and make the law a menace rather than a safeguard. Practical common sense must be our guide to real safety.

SMOKING IN MINES DANGEROUS

Another question of mine safety that was recently discussed in *Coal Age* related to the smoking of cigars and cigarettes in mines generating gas. Commenting on that question, James Ashworth, mining engineer (Apr. 21, p. 716), asked in substance the question as to whether it would not be better to practice a little more prevention of danger in coal mining, instead of continuing to preach so strongly "safety first" when we disregard its actual practice in the mine.

It may be true that a lighted cigarette will not ignite gas; but if the experiment is to be made in a body of gas accumulated in the mine I am going to let the other fellow do it and ask him to wait till I get outside. In this discussion, also, the general opinion was expressed that no matches, tobacco, pipes or other articles for smoking should be permitted in a gassy mine.

Some years ago, while acting as fireboss in a very gassy mine where locked safety lamps were used exclusively and the rules forbade the taking of matches or other articles for smoking into the mine, the superintendent came to me one day, on the main entry, having a lighted cigar in his mouth. At my request, he put out his cigar, and I then took the opportunity to impress on his mind that it was impossible to make employees obey the rules when these were violated by mine officials.

All practical mining men will agree, I believe, that no law can be so framed as to be intelligently applied to meet the manifold unsafe conditions that continually arise in the mining of coal. Bearing this fact in mind, the lawmakers, in Tennessee, passed an enactment authorizing the chief mine inspector and his assistants, in conjunction with mine officials, to formulate rules and regulations that would bring these varying conditions in mines under better control and insure safety.

CLASSIFICATION OF TENNESSEE MINES INCREASES SAFETY

One broad and important provision of the Tennessee Mining Law divides the mines in this state into four classes, having respect to the generation of explosive gas and dust in dangerous quantities and the number of persons employed in said mines. All mines are designated as belonging to one of these classes and governed accordingly.

In addition to this classification, the requirements of the law applying to the mines in each class are such as relate to the conditions known to exist in such mines. Also, the certificates of competency granted by the examining board, and the examination of candidates for the positions of mine foreman, assistant foreman or fireboss, are graded accordingly.

Even with this careful classification, respecting mining conditions in the Tennessee law, instances can be cited to show that the law cannot go into detail in every instance. For example, our law requires that breakthroughs on entries shall be 60 ft. apart, in Class-A mines. I have had experience in gassy entries going to the rise that could not be driven with safety that distance ahead of the last breakthrough.

In all such instances, it is my conviction that the mine foreman, assistant foreman and fireboss must act on the side of safety regardless of the requirements of the mining law.

JOHN ROBE,
Former State Mine Inspector.
Dayton, Tenn.

Gravity-Plane Problem

Numerous suggestions made by different writers to enable a single gravity plane or incline to serve two mines located at different elevations on a hillslope.

IN ORDER to make possible an intelligent study of the gravity-plane problem presented by a Pennsylvania superintendent, in *Coal Age*, June 2, p. 999, more data should have been submitted than is given in that inquiry. For example, any conclusion to be of value would have to be based on the information derived from the following sources:

A profile should be prepared showing the position of the knuckles at the two upper landings and the tippie at the bottom of the incline, together with the location of all switches and headsheaves. A plan should be given showing the layout of the tracks on the tippie and the connection of the tracks on each landing with the incline.

The inquirer should state whether the ropes are attached directly to the mine cars, or whether dillies or monitor cars are used. If the mine cars are used on the plane the number of cars run in a trip should be given; also the average weight of a car empty and loaded.

DAILY TONNAGE OF EACH MINE

It is important to know, moreover, whether the brake-sheaves are supplied with any other power than gravity; what daily production of coal is desired, and the proportion of output from each mine. It may be intended that the new mine shall be developed only fast enough to maintain a constant production of coal as the output from the old mine decreases. In that case, it should be stated how much more coal the upper mine will put out before the supply will be exhausted.

My experience with a number of different gravity systems enables me to say that not one of them is satisfactorily serving two levels. Inasmuch as the two levels in the present instance are but 100 ft. apart, my advice is to deliver the old-mine coal to the new-mine level, either by a switchback or a separate gravity tram. I would then operate the main incline entirely from the lower level.

As has already been suggested, it may be possible, by the use of an extra length of rope and proper couplings to serve both levels. However, this can hardly be done without confusion, delay and danger, resulting in a higher cost of production. **BERT LLOYD,**

Mining Engineer.

Colorado Springs, Col.

Another Letter

WITH a desire to help to solve the problem of a single gravity incline serving two mines located at different levels, 100 ft. apart, allow me to describe briefly an arrangement that is in successful operation on a slope, at an up-to-date colliery in this locality.

The slope has an inclination of 25 or 30 deg. and is double-tracked its entire length. A sufficient space has been excavated at each landing from which coal is hoisted. I see no reason why the same system would not apply to the lowering of coal from openings on a hillside to the tippie below.

As indicated in the accompanying figure, adopting the same plan, the rails

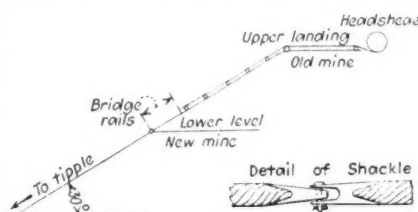


DIAGRAM SHOWING PROFILE OF INCLINE

on the incline are made continuous from the knuckle of the upper landing to the tippie at the foot of the plane, except that there is provided a movable section of bridge-rails at the lower level.

On each landing there is laid a steel plate on which the cars can be run and turned about ready to be lowered on the incline. Instead of this steel plate, a turntable can be used, if so desired, which may make the cars more readily handled.

When the empty trip has arrived at the upper landing and it is desired to lower the next trip from the landing at the new mine, an extra length of rope is coupled to the end of the main rope at the upper landing. As has already been explained in the reply to this inquiry and referred to by other writers, this extra length of rope lies at the side of the track when not in use and requires no explanation.

The lower end of this extra rope is now coupled to the car that has been run out from the lower landing, and this is lowered to the tippie. At the same time, an empty car is drawn up the plane to the level from which the loaded car was taken.

It is understood, of course, that the movable section of bridge-rails is taken out whenever it is desired to serve the lower level. Or, if desired, this section can be hinged at its upper end and raised sufficiently to permit the passage of the car from the level onto the incline, provided the construction of the bridge is such as not to interfere with the haulage rope.

This arrangement works like clockwork in the mine and would undoubtedly give equal satisfaction above ground. I have shown a detail of the rope shackle used for coupling the extra length of rope to the main rope.

MAC.

River Herbert West,
N. S., Canada.

Third Letter

REGARDING the question of making a single gravity incline serve two mines situated at different elevations above the tippie, my plan would be to

build and operate two independent planes.

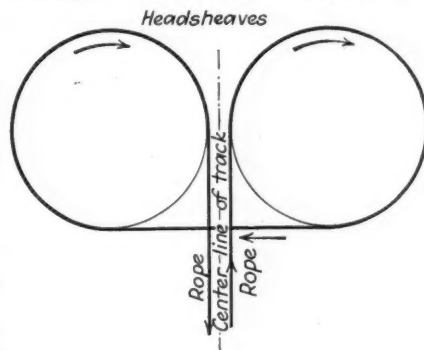
In the present instance, however, I would reconstruct this double track plane by tearing out one of the tracks from the upper level down to the landing at the new mine. There will then remain two lines of track, one extending from the upper level of the old mine to the tippie and the other from the lower level at the new mine to the tippie, the first being 1,100 ft. in length and the second 1,000 ft. in length.

At the middle point and on the outer side of each of these tracks, I would build a sidetrack or parting to enable the descending and ascending cars to pass each other on each incline. The parting of the track leading from the old mine would be 50 ft. above the one on the track leading from the new mine.

Both of these partings should be equipped with latch switches. The movement of the cars as they pass through these switches will throw the latches into position for the next car returning. In this way, the switches are automatic, each car ascending or descending setting the switch for the next car returning.

Some will doubtless prefer that the latches be equipped with double springs, believing that the springs will close the latches more completely. If the track gage is properly arranged, however, and the latches are kept in good condition, there should be no danger that the movement of the cars will not properly close the switch for the next returning car.

Allow me to suggest that, in this arrangement, the headsheave on each landing will serve but a single track



and it will be better to have the ropes run on and off the sheaves on the inner side, as I have indicated in the accompanying figure. This will have the advantage also of giving a full three-quarter turn of the rope around each sheave, and will bring both cables in line with the center of the track. Of course, the brakes must act on both sheaves in order to utilize the total adhesion of the rope.

Peru, Ill.

GASTON F. LIBIEZ.

[The two preceding letters suggest radical changes in the present incline. One requires the building of a separate track system for serving No. 2 mine, which would be contrary to the information desired in regard to utilizing the present track for that purpose. The

other proposes to lay plates on the incline at each landing, apparently for the purpose of doing away with switches and crossovers at those points. The idea of laying plates on which to turn the cars and run them onto the sidetrack, at each landing, could not be considered as practicable in the operation of a gravity plane.

What was asked by this inquirer is information that will enable him to utilize the present track system to serve both mines. In the letters presented, several good points have been brought forward, which should prove of great assistance in the solution of this problem.—EDITOR.]

Fourth Letter

THERE are two plans that I would like to offer for the purpose of enabling a single gravity plane to serve two mines one located above the other. Both of these plans have been in operation for several years and are giving excellent service at the present time.

It is not stated in the inquiry that started this discussion, whether the mine cars are run over the incline, or a monitor car is in use. The plans I am about to present relate to both of these conditions, however, and I hope will be of interest.

FIRST PLAN, USING MONITOR CARS

First, we will assume that two monitor cars are used on the incline and the mine cars are dumped into these at each landing. We will say that each monitor car has a capacity of ten tons and will make an average of twelve trips an hour, which would mean an output of 120 tons per hour, or 960 tons in an eight-hour shift, making the possible output from the two mines 1920 tons a day.

A dumphouse or tiphouse should be built over the incline at each landing, and a bin or hopper having a capacity of from 75 to 100 tons constructed just below the tipples, but giving a sufficient clearance for the monitor car to pass under the bin.

The bin must be arranged with a door operated by a lever. There should be a door over each track of the incline so as to load either of the monitor cars. At any time when it is desired, a monitor car can be half-loaded at the upper landing and the loading completed at the lower landing.

Wherever it has been installed and used, this system has given good satisfaction. I should have stated that a signal-light system is employed to signal between the two landings and the tipples at the foot of the incline. If properly arranged, such a signal system will afford no opportunity for misunderstanding and will insure safety in operation.

SECOND PLAN, USING MINE CARS

The second plan considers the case where the mine cars are run over the incline and dumped at the tipples below. In this case, as in the first instance mentioned, a dumphouse is con-

structed over the incline at the lower level, the mine cars from that level being dumped into a bin as before. The cars from the upper level are the only ones brought over the incline.

When it is desired to load coal from the lower level, one or more empties are attached to the loaded trip at the upper level. The trip is then stopped at the lower landing and these empties are filled from the bin at that level, after which the entire trip is lowered to the foot of the incline. Or, an entire empty trip can be lowered from the upper landing and loaded at the lower level if that is desired.

For the sake of illustration, we will assume a six-car trip of empties is ready to be hoisted at the foot of the incline. It is evident that to start this trip and overbalance its weight and the weight of the haulage rope on the incline, it will be necessary to lower a larger number of empties for loading at the lower level, or start with some loads from the upper level.

In either of the cases here mentioned there will be no extra incline to build,

or switches to install and the system will require no extra room. Should it become necessary to increase the tonnage of the mine, all that will be required will be to install monitor cars of larger capacity, or lower a larger number of mine cars in a trip.

I have assumed that the plane makes twelve trips an hour, making the total output from the two mines, in eight hours, 1920 tons. When everything is in proper condition, however, it will be possible to make fifteen trips per hour and thus increase the tonnage 25 per cent and provide for a total output of 2,400 tons of coal from the two mines.

When the mine cars are to be loaded on the incline at the lower level an extra apron of sheet steel should be provided and hung on hinges so as to make it adjustable to the height of the car and avoid waste of coal in dumping.

OSCAR H. JONES,
Brier Hill Collieries.

Crawford, Tenn.

[Practically the same two systems are described in a letter by James Jones, Crawford, Tenn.—Editor.]

Inquiries Of General Interest

Recovering a Misfire in Blasting

No Attempt Should Be Made to Drill Out the Stemming or in Any Way to Tamper with a Shot That Has Misfired—Drill a Hole About a Foot or 18 In. from the First Hole and Blow Out the Charge

AT ONE of our mines, a miner has drilled a hole 5 ft. 6 in. deep, in an extra hard sandstone at the face of a heading, using a jackhammer drill for the purpose. The shot was intended to lift or break a rock 3½ ft. thick and 6 ft. wide. The miner was working by himself that day and charged the hole with ten joints of 40 per cent dynamite, which he tamped with clay to the mouth of the hole.

The shot failed to explode and the miner has now left and is working in another coal field. For certain reasons, we do not want to drill another shot-hole and desire to know how this hole can be unloaded in the safest manner possible. What makes the matter worse is that we do not know in which joint of the dynamite the exploder is inserted. We hope that some one will be able to help us solve this problem.

Crawford, Tenn. MINE FOREMAN.

It is never safe to attempt to draw a charge that has been misfired. We have known of cases where miners have taken the exact measurement from the mouth of the hole to the charge, before tamping the hole, so that in case the shot would fail to explode, they could drill out the stemming to within two or three inches of the charge and insert a fresh primer that would enable them to fire the hole successfully.

This practice, however, cannot be recommended and the miner who follows it will sooner or later forfeit his life as a result. In the present instance, such a proceeding would be extremely dangerous, as the depth of the stemming is not known, neither the location of the primer in the charge.

The only safe method of proceeding with a misfire is to drill a second hole, say a foot to one side of the first, taking every precaution to avoid the risk of striking the charge when drilling the second hole. Even by this method there is danger that some of the dynamite of the first charge will remain unexploded and extraordinary care must be used in removing the broken rock, after the shot has been fired. It is customary, when firing a second hole to blow out a charge that has misfired, to make a careful search for any unexploded cartridges that may remain after the shot is fired.

Profit and Loss in Mining

Conditions in a certain mine cause a loss on one side and a profit on the other side of the shaft, and it is required to determine the net profit or loss.

IN ORDER to test my knowledge of arithmetic, perhaps, a friend has given me the following question, re-

garding the solution of which I am not at all certain:

In the development of a particular mine, coal was produced on one side of the shaft at a considerable loss, owing to faults and bad roof. On the other side of the shaft, the conditions were normal and the coal mined at a profit. The selling price of the coal was \$2.40 per ton. The cost-sheet shows that, while there was a loss of twenty-five per cent in working the coal on the one side of the shaft, there was a gain of twenty-five per cent in working that on the other side. The question is asked, Was this development a paying or a losing proposition?

STUDENT.

McComas, W. Va.

If there was a loss of twenty-five per cent in mining the coal on one side of

the shaft and all the coal sold for \$2.40 per ton, the returns, here, are seventy-five per cent of the cost of production, which is $2.40 \div 0.75 = \$3.20$ per ton, on the faulty side of the mine.

Again, the coal mined at a profit of twenty-five per cent and sold at \$2.40 per ton shows the cost of production, in that case, to be $2.40 \div 1.25 = \$1.92$ per ton.

The average cost of production is, therefore $(3.20 + 1.92) \div 2 = \$2.56$ per ton of coal mined. Selling at a price of \$2.40 per ton, the net loss is $2.56 - 2.40 = 16c.$ per ton. The development is therefore a losing proposition. This is a question often asked in the study of "Profit and Loss," intended to catch the unwary. The percentage of gain or loss is always estimated on the cost price.

Examination Questions Answered

Bituminous Mine Inspectors' Examination Pittsburgh, Pa., March, 1921

(Selected Questions)

QUESTION—What are the duties of a mine inspector with respect to the following: (a) In case of a mine explosion? (b) What would be your method of procedure when violations of the mine law were reported to you? (c) In case a condition arises at a mine that endangers life and health, what action would you take? (d) How often would you examine a mine as an inspector and what report would you make? (e) What maps are required and what should they show?

ANSWER—(a) Proceed at once to the mine and take charge of the rescue work that may be already in progress. In the meantime, notify the nearest available rescue teams and stations. Having arrived at the mine and made a hurried examination regarding the situation, condition of the ventilating apparatus, the means available for entering the mine, rescue appliances and other supplies, call for volunteers, select the most experienced men, organize them under reliable leadership and see that they are equipped with safety lamps and the necessary tools and supplies. Enter the mine with the men, following the intake air, and do everything possible to find and rescue any survivors of the disaster.

(b) Investigate promptly any violation of the mine law reported and ascertain, if possible, where the responsibility rests. It is the duty of the inspector to see that every violation of the law is suitably punished and, if necessary, hale the transgressor before a judge of the court of quarter-sessions in the county.

(c) Whenever danger is known to exist in a mine, the same must be reported at once, the inspector making a full written report and, if necessary, withdrawing the men and closing the mine until the danger is removed. Before permitting the men to return to their places in the mine, the inspector must make a thorough examination and see that all requirements have been complied with by the company and the mine made safe for work.

(d) The Anthracite Mine Law requires the inspector to examine and report the conditions of each working place in each colliery every four months. If necessary, in the judgment of the inspector, he should make more frequent examinations of mines where dangers are likely to develop. This report should be submitted to the company and a duplicate posted in a conspicuous place, in the mine opening, in a glass covered case, where it will be protected from the weather and can be read by the miners working in the mine.

(e) The law requires that an accurate map or plan of the workings of a colliery shall be drawn to a scale of 100 ft. to the inch and show all the workings or excavations in each and every seam of coal, the tunnels, and passages connecting them and give also the inclination of the strata, in degrees, and the tidal elevation of the shaft or slope bottom and at different points throughout the mine, as required by the inspector. The map must show the boundary lines of the property, the date of each survey and the location of any dam built to prevent the flooding

of the mine, together with its elevation and the area of the section that may be covered by the water.

QUESTION—What one cause produces the greatest number of accidents in the bituminous mines of this state, and what would you recommend to reduce such accidents to a minimum?

ANSWER—The greatest number of accidents in mines is caused by falls of roof and coal at the working face. To reduce these to a minimum safety inspectors should be employed to make frequent and careful inspections of the working faces while the men are at work. A plentiful supply of timber of the proper kind should be kept constantly on hand, in each working place, and a systematic method of timbering should be adopted wherever this is practicable.

QUESTION—An airway passes 10,000 cu.ft. of air per minute; what must be the increase in pressure in order to pass the same amount through an airway whose cross-section has the same area, but whose rubbing surface is 1.6 times as great?

ANSWER—For the same quantity of air in circulation and the same sectional area, the unit pressure varies directly as the rubbing surface. Therefore, to pass the same quantity of air under these conditions, the pressure must be increased 1.6 times the original pressure.

QUESTION—How would you approach the burning section of a mine; and, in case the condition necessitated the sealing off of the burning section, what steps would you take to insure the safety of the workers and the success of their work?

ANSWER—The burning section must be approached from the intake side, in order to avoid the danger of being overcome by the gases produced by the fire.

Should it be necessary to seal off the burning section, the men should be promptly withdrawn from the mine and only such persons be permitted to enter as are required for the work of building the stoppings. A danger signal must be placed at the entrance of the mine and the place carefully guarded to prevent any one from entering, except those engaged in the work. In building the stoppings, every precaution should be taken to insure safety. No open lights may be used and the stoppings should be built in such a manner and order as will reduce the danger of an explosive mixture forming in the enclosed area to a minimum.

In general, the first stopping should be started at the return end and the work proceed in regular order from that point to the intake end. Some will prefer to leave a small opening in the stopping at the return end and close this at the same time that the intake stopping is closed. All stoppings must be well built and carefully sealed, and pipes should be built in, at the floor and the roof, to allow for drainage and the inspection of the condition of the air from time to time, as may be required.

Public Service Co. Analyses at Variance with Dr. Payne's Data on Tidewater Pool Coals

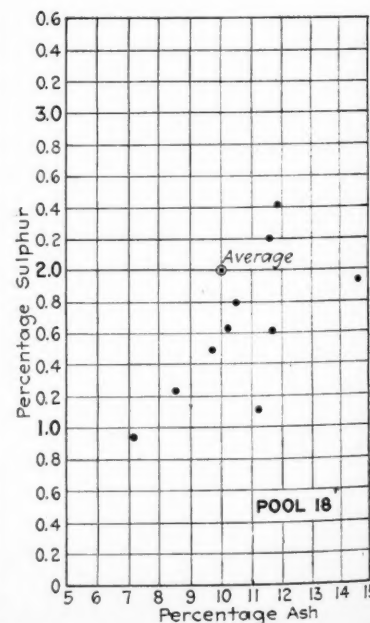
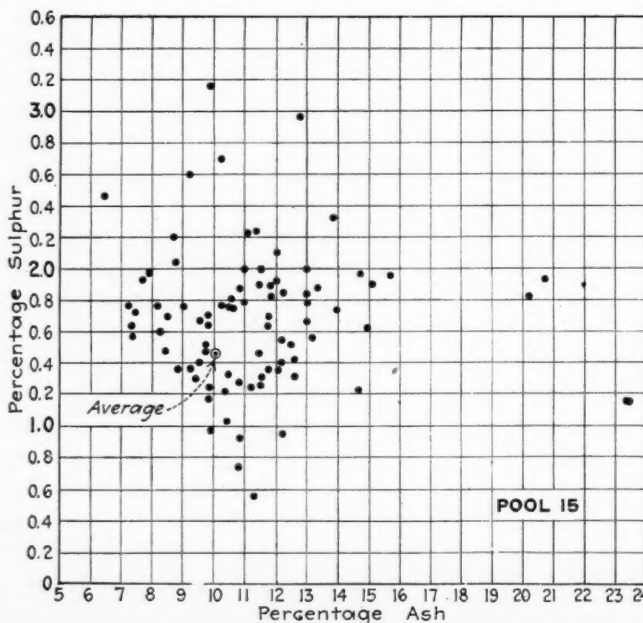
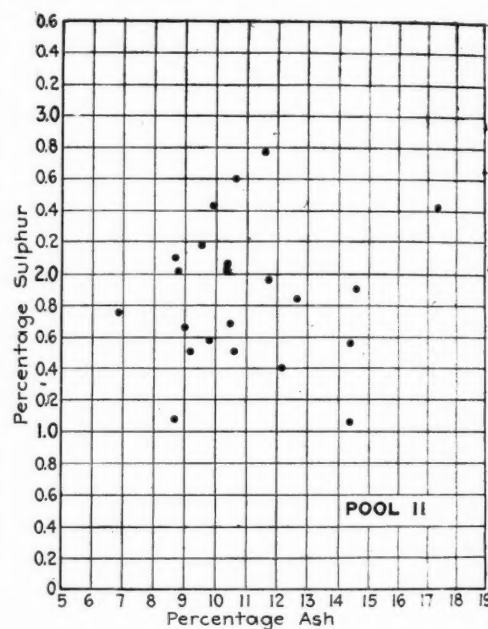
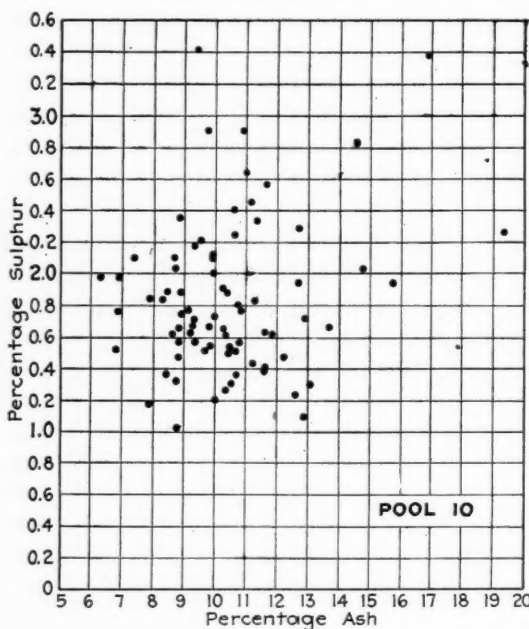
Actual Experience Shows Estimates of Volatile Too High on Pools 11, 12, 14, 15 and 18—Higher Ash Found Except in Pool 18—Tables Agree in Showing High Quality of Pool 18

BY G. A. DE GRAAF*

MY EXPERIENCE with "pool" coal does not fully bear out the average analyses given by Dr. H. M. Payne in his article in *Coal Age* (March 17, 1921), and for the information of others who may be buying coal by the tidewater classifications and to add to the published data on this important subject I have put together some of the figures collected in the past year in our laboratory.

The following table, showing in parallel columns the averages for pools 10, 11, 12, 14, 15 and 18 as reported by Dr. Payne and as shown by careful averaging of analyses of more than two hundred barge samples as received at our stations, indicates that Dr. Payne's estimates of volatile in every instance except pool 10 are considerably above our actual experience with the particular pools; that he is from one to four per cent low on ash in every instance except that of pool 18; that on sulphur he is too low on pools 10, 12, 14 and 15 and too high on pools 11 and 18; that his averages of heat value for pools 11 and 12 are below what I have found by actual tests and too high on pools 10, 14, 15 and 18. It is interesting to note that as reported by Dr. Payne the pools considered in order of low percentages of ash are 12, 10, 11, 14, 15 and 18, while our experience would place the order as 18, 12, 11, 15, 10 and

14. The maximum range in ash between pools as disclosed by averages of our tests is about 1.8 per cent, whereas Dr. Payne shows 2.7 per cent. As regards sulphur we agree in finding that, of the six pools under discussion, 14 is the lowest, but he finds 11 the highest while I find 10 the highest. My experience would indicate that he has placed the low sulphur too low and the high too high. As between 12 and 18 I find a difference of but 0.18 per cent and he reports 0.82 per cent.



RELATION OF ASH TO SULPHUR IN SAMPLES OF COMPLETE BARGES OF POOL COAL

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Pool 14, which my figures show to be lowest of the six in heat value, doubtless because so high in ash, Dr. Payne records as second highest. As between the highest and lowest in these pools I find less than 500 B.t.u.; Dr. Payne shows nearly 1,300.

What to me is quite interesting is the good showing, as disclosed by Dr. Payne's figures as well as mine, for pool 18. This pool, I understand, has the reputation in the trade of being generally poor. Neither of these sets of average analyses bears this out, for I find pool 18 as good as 11, and superior to 10, while Dr. Payne shows it higher in heat value than any of the other six under discussion, but little inferior to 10 in sulphur and generally superior to pool 11. Listed as "Fair Low Volatile Steam," I do not understand why Dr. Payne shows the volatile matter in this pool as 29 per cent, my

experience showing that it is a low volatile, being under 24 per cent.

The wide variation in quality between barge lots of coal in the same pool classification is almost astounding. Whether this is due to faulty classification of mines or actual variation in the preparation is not known. In the accompanying diagrams the relations of ash and sulphur are shown for lots of coal in pools 10, 11, 15 and 18, sampled and tested by us.

AVERAGE ANALYSES OF POOL COAL

Pool	Volatile Per Cent		Ash Per Cent		Sulphur Per Cent		B.t.u.	
	Payne	DeGraaf	Payne	DeGraaf	Payne	DeGraaf	Payne	DeGraaf
10	23.48	22.90	7.58	10.39	1.69	1.83	13,850	13,758
11	24.00	23.01	9.00	10.98	2.25	1.90	13,350	13,621
12	28.07	25.14	7.30	10.85	1.18	1.46	12,710	13,713
14	28.00	27.35	9.50	12.19	1.00	1.23	13,930	13,280
15	28.00	24.77	10.00	11.28	1.44	1.64	13,875	13,395
18	29.00	23.55	10.00	10.66	2.00	1.64	14,000	13,621

Voluntary Publicity as a Cure for Intermittent Operation of Soft Coal Industry

To Win Good Will and Co-operation Producer Must Acquaint the Public with Actual Conditions—Aggressive Presentation of Mine Workers' Case Has Put Owners at Disadvantage

BY THOMAS ROBSON HAY

PUBLICITY! What is it? In the last analysis, isn't it pretty much putting your best foot forward? You have a commodity which you want to sell, presumably at a profit. But in order to do so, you must produce it economically, distribute it at minimum cost and promptly and give satisfaction. When your product is all you claim for it—perhaps a little more, but never any less—the financial success of your business, assuming good management, is fundamentally dependent on the good-will, co-operation and interest of your customer. In the case of the coal industry, the customer is the general public, whether the domestic or industrial consumer. Why not cultivate this public in a spirit of service?

How much does the public know of the actual conditions of coal mining? How much does it know of the physical limitations and handicaps of individual operations, all affecting working conditions and safety and production costs? How much does it know of the fundamental reasons affecting variations in the sale price of coal for different mines, different localities, and at different seasons of the year? What does it know of the character and extent of the modern safety-first precautions as carried out in mining operations? What does it know of the real reasons for the operation of coal-mining properties for only a fraction of the total work year and of the possible practicable and available means for effecting reasonably continuous operation the year round? What does it know of the real equity and fairness of the miner's demands for increased wages and a shorter work day?

DEMAND FOR COAL IS PRIMARILY SEASONAL

First of all, some explanation of the fundamental and controlling conditions surrounding the mining, shipment and distribution of coal should be set forth. The demand for coal is primarily seasonal, both in industry and in the home. It is seasonal in industry to the extent that work is at a higher pressure and because the external conditions of temperature are more severe in winter than in summer. The railroads require more coal in winter than in summer, because of the larger volume of traffic offered and moved and because of the severe obstacles to traffic movement, such as cold, ice, snow and wind. The domestic use of coal in the winter months is, of course, larger because of the requirements for heating.

From the point of view of the coal industry, as a whole,

seasonal freight rates as a method of equalizing and regulating the mining and distribution of coal so as to assure uninterrupted flow to the consumer has not been favored. It is objectionable in that it tends to favor one field, having low production costs, against another field, having, by virtue of existing physical conditions, higher costs. The benefits of such a system of rates probably would be incidental rather than general in that while inducing large industrial plants to take coal in the slack season of demand to the extent of their local storage facilities, would not benefit industry, the domestic consumer or the coal miner and operator to an appreciable extent, because of the lack of sufficient and extensive storage facilities.

COAL LACKS STORAGE FACILITIES OF GRAIN BUSINESS

Let us consider the fundamental conditions of the grain market relative to the coal market as a means for showing what is possible in the way of benefiting the coal industry. Both markets are seasonal, the one as to production, the other as to demand. In the case of grain, elevators are erected to shelter and store the crop as it is harvested, from which point it is distributed as required. With coal no such facilities exist. There are several reasons for this. In the first place, coal is more bulky and is, to some extent, more apt to deteriorate and to be lost—by spontaneous combustion. Secondly, it is only within recent years that the demands of industry and the concentrations of population in urban centers have created serious obstacles to the smooth flow of coal from mine to consumer, as required. Thirdly, in the absence of an active public demand, conditions have been allowed to drift and it is only slowly that the public is coming to realize that the present condition of the soft coal industry is uneconomic and wasteful, and that it can and should be rectified.

The public, superficially at least, understands conditions surrounding the production of grain, as nearly everyone, at one time or another, has been on a farm. On the other hand, the public knows practically nothing about coal and the conditions of mining, except what is seen and heard of the dirt and danger and what is read in the popular periodicals, which is too often written from the miner's or the socialistic point of view.

Another important point to be noted is that the miner has, for practical purposes, a fixed place of employment. He may be underemployed, at times, but he is certainly

not casually employed. His living, housing and wage conditions and hours of labor are generally more pleasant than are those of the farm hand. Because he is more or less permanent as to place of work, the miner is capable of organization and has his organs of publicity, which enable him, collectively, to place his case aggressively and, too often, unfairly, before the public.

From a psychological point of view it should be noted that the farmer is almost universally an individual operating with small capital and on a relatively small scale. To that extent his case is personal. The coal operator, on the other hand, usually is a capitalist, in name if not in fact. His scale of operations, judged by the capital invested, is relatively and often actually large and his relations with the public, as a whole, absolutely impersonal and corporate.

The methods of publicity will consist mainly in public and civic participation in municipal, state and Government affairs, always with the idea of creating an intelligent popular understanding of the fundamental conditions and handicaps underlying the mining, distribution and sale of coal and also with a view to contributing, in any manner possible, to the public convenience, comfort and welfare. If the coal operator does not take the trouble to put his business intelligently and fairly before the public he can certainly expect no one else to do it. In this day of change and upheaval such a course is necessary if the coal industry is to avoid falling into the hands of doctrinaire and Governmental theorists for experiment and exploitation.

Coal, in one form or another, is at the bottom of our industrial and social structure. In the operation of the railroads and traction systems, in the production of electric heat, light and power, in the production of artificial gas, of steel, heat, ice, and of many other commodities in everyday use it is the primary element. This being the case, why not capitalize the fact and take advantage of the key position of this important and far-reaching industrial asset?

EDUCATE PUBLIC IN COAL MINING AND MARKETING

The form of this publicity will be varied, but for its primary aim will have public education as to the difficulties and handicaps encountered in the mining and marketing of coal. First of all, it should be clearly pointed out that the production price of coal will vary according to the locality and physical conditions in the mines.

It is in the matter, primarily, of visible living conditions and environment, and only to a less extent of wages, that the coal miner makes his appeal to the public. Let us return to the comparison with the farm hand. Who will say that the miner's lot is as bad? True, he works in dirt. His appearance at the end of a day's work is not as clean as that of the farm hand and his occupation is somewhat more hazardous, but it is no dirtier or more hazardous than that of the steel worker. In neither case are the miner's hours as long or as physically tiring. His work is essentially intermittent, with varying lengths of rest. His living conditions and environment are certainly more pleasant than are those of the steel worker. His food and living quarters are, or can be, more palatable and cleanly than is the case with the casually employed farm hand. The miner is certainly no more exploited than is the farm hand and he has the advantage of being a skilled worker.

Fundamentally, the miner's grievance is that though he is ready and willing to work every day conditions beyond his control, such as car shortage, lack of orders, etc., prevent. It is this condition that makes of him not a casual laborer, in the strict sense of the word, but rather causes him to be temporarily unemployed and, to a certain extent, underemployed. A man may be said to be underemployed when his average daily wages, taken over an appreciable period, are insufficient to afford adequate subsistence. The conditions of intermittent employment generally characteristic of the coal industry is at the bottom of all wage demands.

Seasonal fluctuations of demand, resulting in intermittent employment, or of temporary unemployment, if you

please, really is a question not of unemployment as such but of wages. From an economic point of view, no industry is self-supporting unless it pays real wages sufficient to keep men not only while they are at work, but also while they must stand idle and in reserve.

The connection between miners' wages and the question of publicity is just this. The prevailing apparently high wage scale is fixed, under normal conditions, by the fact of intermittent employment, due to the seasonal nature of coal demand and of the mine operation. This seasonal demand, with resulting slack and busy periods of mine operation, is due to the lack of any regularizing medium. Inasmuch as the physical conditions affecting demand cannot be changed, any regularizing medium must be artificial. Seasonal freight rates, as mentioned, are only palliative and do not go far enough. Practically, the only other available medium is storage. The present obstacles to any comprehensive system of coal storage are custom, public ignorance and indifference and lack of present easily available facilities.

REGULARIZATION WOULD BENEFIT THE OPERATOR

The operator would benefit by regularization because his income would be more stable and certain. Instead of being compelled to equip his mines for a maximum production that may be required for only a relatively short period of each year, his mine would be equipped to produce a previously determined average tonnage month in and month out. Regularization would not only make for a more friendly spirit of co-operation between operator and miner but would relieve the operator of much of the unjustified accusation and invective to which he is now subjected.

The miner would benefit because his employment and income would be more stable and dependable. Because of his resulting generally continuous employment, his day wages in all probability would be reduced, but his annual income would be increased, because of his practically continuous employment.

The public would benefit because the supply would tend at all times to equal the demand and at a fair and more or less stable price. Strikes and labor disputes would become less frequent. Railroad and terminal congestion would be reduced and the movement of other needed commodities not delayed.

Some have suggested nationalization as the only remedy for the present admittedly bad situation. Though theoretically a sound economic tenet, practically such administration and operation of any business on a large scale has never been satisfactory, either in this country or abroad. It is not evident how such a step, in the present state of the coal industry, would be beneficial or advantageous to either the operator, the miner or the public. The physical conditions affecting the production, transportation and distribution of coal would not be changed simply by a change of ownership and control.

Why should not a constructive campaign of publicity point out to the great consuming public the fallacies of nationalization and show that, regardless of theory, its practical effect would be to make the price of coal higher, not lower, and its delivery more uncertain than has ever been in the case under the present private management? Our present highly inefficient and expensive Government in Washington with its superfluous and unnecessary bureaus and commissions, duplicating and bucking each other is only an example of what can be expected if "Government in business" rather than the reverse is to be continued.

As has been pointed out, the present state of the industry requires that employment be irregular and intermittent. Labor has learned neither to constructively attack nor to combat irregularity of earning as it has low rates of pay.

Capital, by virtue of its position, must show the way and lead the fight in any intelligent and constructive effort at reform. The best and simplest and most readily available weapon for the consummation of the desired end is publicity. It is on the foundations of right knowledge and fair dealing and understanding that any radical, and, at the same time, beneficial departure from established practice must rest.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE observers of business, according to a review of business conditions for August, issued by the National City Bank of New York, are almost unanimous in their assurance that there is a "better feeling" about business. "Just exactly what this recurring phrase means is difficult to state," the review continues. "It might be descriptive of any of a dozen psychological changes that could enter into the situation. If it means that people generally have begun to realize the causes that have thrown industry out of balance, and to appreciate the things that must be corrected before conditions come into equilibrium again, then we should say that the reported 'better feeling' constituted an important advance toward normalcy. If, however, the 'better feeling' means simply that people are merely smiling and waiting more patiently, rather than setting themselves seriously to the task of wage and price reductions and other readjustments that are necessary, then we fear that it signifies but little.

"There is fresh evidence constantly that the readjustments are taking place. They are slow, but it takes time for a knowledge of conditions to reach all classes and divisions of the population, and for them to make up their minds to give the co-operation that is necessary to bring industry back into balance. Meanwhile, it will aid in the cultivation of patience to realize that conditions are by no means so bad as they might be, and that considering all the circumstances the volume of business is really surprisingly large.

"The monthly letter of the Federal Reserve Bank of New York for August gives a table showing a calculation in percentage figures of the production in this country of eleven important commodities. These figures show a very uneven state of industry, but they do not indicate anything like complete prostration. July is the midsummer month and normally not one of great activity, but business prospects in the commodities of common trade are considered good for a maintenance of the present volume and perhaps some increase of demand in the fall. It is now more than a year since dealers have bought goods freely for stocks."

Steel Mills Increase Operations

Steel plants of the Youngstown district began Aug. 1, a week of decidedly increased operation, with open-hearth steel production at about 50 per cent of capacity, considerably better than for many weeks. A blast furnace idle since May 21 was put in operation by the Sharon Steel Hoop Co., and rolling mill and sheet mill operations were increased at all the large plants. The Carnegie Steel Co.'s schedule for the week was for 85 per cent operation at its Ohio works and increases were made in the schedules of the Republic Iron & Steel Co. and the Brier Hill Steel Co.

More men were at work in the mills of the Shenango Valley, Pa., last week than for several months, the Sharon Steel Hoop Co., the Petro-

leum Iron Works, the Standard Tank Car Co. and the Sharon Pressed Steel plant having increased their operations. The Pittsburgh Steel Co. and the American Sheet and Tin Plate plant at Monessen also resumed last week. About 3,000 men are employed in the two plants.

Industrial Gain in Philadelphia

Industrial conditions in Philadelphia showed slight improvement for July, according to a survey completed July 31 by the Chamber of Commerce. In 72 per cent of the city's business establishments employment has increased slightly, while 8 per cent reported no change, and the remaining 20 per cent reported slight cuts. Predictions are made for still greater decreases in the ranks of unemployed for August.

Idle Freight Cars Reduced 10,000

Freight cars temporarily out of service totaled 555,168 on July 23, according to reports received from the railroads by the car service division of the American Railway Association. This is a reduction of approximately 10,000 since July 15. In reaching this total, the car service division takes into account the total number of cars now in excess of current freight requirements as well as the number of cars now awaiting repairs above 7 per cent of the total. Officials believe that this percentage, while higher than the accepted maximum of the pre-war period, probably represents a better standard for present comparisons, due to the difficult conditions respecting labor and materials during the past three years.

More Rail Employees Return

The Chicago & Northwestern R.R. announces that operations were resumed with a full force in the car shops at Chicago Monday, Aug. 1. At the same time the locomotive shops re-employed 25 per cent of the usual force. About 1,200 men got their jobs back.

The middle division officials of the Pennsylvania Railroad Co. ordered the return of 76 furloughed men, effective Aug. 1. The Altoona works has recalled 150 men. In all 300 men were recalled last week in the shops at Altoona, Pa. One hundred men were taken on at the Hollidaysburg repair shops July 28.

Pottery Industry Slumps

The pottery industry of the United States is operating on less than a 50 per cent basis, and the prospects for increased production are not considered bright by members of the United States Potters' Association, in session at Atlantic City to discuss wage readjustments with the National Brotherhood of Operative Potters. The potters have felt depression only in the last few months, it was stated, being one of the last industries hit.

More Go to Work in Michigan

Michigan industries have added 34,000 employees to their working forces since April 1 and are now operating on a basis of about three-fifths of their peak time, according to employment engineers' reports given to the Employers' Association of the Chambers of Commerce of twenty-four leading cities of the state. The compilation shows there are now 310,512 employees at work in the factories of these twenty-four cities, compared with 276,500 at work April 1, and a low ebb of 136,000 men when the industrial depression was at its worst.

Baltimore Coal Exchange Is Indicted as Monopoly by Grand Jury

ALLEGING a conspiracy to create a monopoly through the manipulation and fixing of the price of anthracite coal in Baltimore and the State of Maryland, the Grand Jury brought indictments Tuesday, Aug. 2, against the officers, directors and individual members of the Baltimore Coal Exchange. The men indicted, twenty-six in number, are said to represent firms and individuals who handle 90 per cent of the hard coal sold at retail in Baltimore.

There are eight counts in the indictment, which charges that the Baltimore Coal Exchange is a corporation, without capital stock and membership in which is voluntary, and that the members and firms mentioned were parties to a trust, agreement, combination, confederation and understanding under the name of the Baltimore Coal Exchange, to create a monopoly in anthracite coal in Baltimore, contrary to the law.

Among those mentioned in the indictment were Hugh C. Hill, president of the exchange; J. Edward Waesche, of the Chesapeake Coal Co.; J. Harry West, Enterprise Coal Co.; Charles N. Parkinson, American Ice Co.; Benjamin F. Lucas, City Ice Co., and Bushrod M. Watts, all being among the better known dealers of the city. The Carroll Independent Coal Co. also was indicted as a corporation.

Robert F. Carman, U. S. District Attorney, in a statement made Aug. 3, said that if the evidence of State's Attorney Robert F. Leach, Jr., disclosed co-operation on the part of coal operators with the plans and purposes of the Exchange the Sherman Anti-Trust act would clearly apply, in which event the Federal Government would take independent action against the indicted officers and directors.

International First-Aid and Mine-Rescue Meet to Be Held at St. Louis

UNDER the auspices of the U. S. Bureau of Mines, the American Red Cross, the United Mine Workers, and coal operators' associations, the sixth annual International First-Aid and Mine-Rescue Meet will be held at St. Louis Sept. 1, 2 and 3. Virtually every mining district in the country will be represented and several Canadian and Mexican mining regions are expected to participate. The British and Belgian governments have announced their intention of sending representatives.

Dr. E. R. Hunter, of the American Red Cross first-aid service, who served as chief judge at the Denver contest last year, will act in a similar capacity at St. Louis. In addition to the prizes offered by the National Safety Council and other organizations, the American Red Cross will present medals to the most proficient teams. To help carry on its first-aid work throughout the country, the Red Cross desires the support of the people generally, and it is hoped that during the fifth annual Roll Call, Nov. 11-24, the membership will be greatly increased.

Census Figures Show Growth of Bituminous Mining Industry Between 1909 and 1919

A STATEMENT of the general results of the bituminous coal industry in the United States covering the calendar year 1919 was issued July 30, 1921, by the Bureau of the Census, Department of Commerce. It consists of a preliminary summary comparing the figures for 1909 and 1919, by totals, and is subject to such change and correction as may be found necessary on further examination of the reports. The statistics cover mining of coal of all kinds except Pennsylvania anthracite.

The word "enterprises" as used in the census reports may mean more than one mine provided they are operated by a single organization and located in the same state or producing district. The number of mines reported is the count of individual mines or closely-related groups of mines operated as a unit. It does not include a very large number of small coal mines producing for local consumption.

The growth of the bituminous coal-mining industry* for

the decade 1909 to 1919 is shown by increases in all the principal data: The number of enterprises nearly doubled; the number of individual mines operated increased by more than one-third. The statistics show small increase in the total number of persons engaged, large increase in the number of salaried employees, and slight increase in the average number of wage earners. There also are shown large increases in power used and in capital invested, and very large increases in the principal expenses of operation and in the value of products. Only moderate increase is shown in the quantity of coal produced.

COMPARATIVE STATISTICS, BITUMINOUS MINING, 1919 AND 1909

	Producing Enterprises 1919	1909	Per Cent Increase
Number of enterprises.....	6,634	3,506	89.2
Number of mines.....	8,314	6,016	38.2
Persons engaged.....	583,155	534,814	9.0
Proprietors and firm members, total.....	4,237	3,739	13.3
Number performing manual labor in or about the mines.....	1,838	1,713	7.3
Salaried employees.....	33,562	19,159	75.2
Wage earners (average number)	545,356	511,916	6.5
Wage earners, Dec. 15, total.....	616,947	570,030	8.2
Above ground.....	108,685	94,173	15.4
Below ground.....	508,262	475,857	6.8
Power used (horsepower).....	2,154,517	1,228,026	75.4
Capital.....	\$1,903,652,355	\$1,062,411,843	79.2
Principal expenses:			
Salaries.....	68,644,930	21,811,710	214.7
Wages.....	681,937,911	294,344,241	131.7
Contract work.....	2,855,966	2,209,672	29.2
Supplies and materials.....	142,308,281	40,530,631	251.1
Fuel and power.....	37,155,089	7,513,894	394.5
Royalties and rents.....	22,242,440	12,093,442	63.9
Taxes.....	34,571,558	4,485,840	670.7
Products, total value.....	1,144,656,425	469,466,096	143.8
Coal—			
Quantity (tons, 2,000 pounds)	459,971,070	376,952,534	22.0
Value at mine.....	\$1,143,001,507	\$401,555,972	184.6

* Includes \$1,654,918, received in 1919 for by-products, work done and power and miscellaneous materials sold.

The growth of the mining industry as a whole is shown in a preliminary statement of the general results of the 1920 census of mines, quarries, and wells of the United States, covering the year 1919, also issued July 30. It consists of a comparative summary for the years 1909 and 1919, by totals. The returns were taken for the calendar year ending Dec. 31, 1919, or the business year of the establishment most nearly conforming to that calendar year.

The statistics show slight increase in the number of enterprises, with moderate decrease in the number of individual mines and quarries and large increase in the number of individual wells operated by them. Of the total number of enterprises shown, 11,466 in 1919 and 12,122 in 1909 were engaged in mining and quarrying industries and 9,814 in 1919 and 7,793 in 1909 in the petroleum and natural-gas industry. There is also shown very slight increase in the number of wage earners and the total number of persons engaged in the industries. In contrast to these small changes, large increases are shown in power used, capital invested, principal expenses of operation, and the value of products.

COMPARATIVE STATISTICS, MINES, QUARRIES AND WELLS, 1919 AND 1909

	Producing Enterprises 1919	1909	Per Cent Increase ¹
Number of enterprises.....	21,280	19,915	6.9
Number of mines and quarries.....	13,766	18,164	-24.2
Number of petroleum and natural- gas wells.....	260,673	166,320	56.7
Number of natural-gas-gasoline plants.....	1,117	2/
Persons engaged.....	1,077,570	1,041,682	3.4
Proprietors and firm members, total.....	21,907	29,922	-26.8
Number performing manual labor in or about the mines, quarries and wells.....	5,257	8,861	-40.7
Salaried employees.....	74,154	44,127	68.0
Wage earners (average number)	981,509	967,633	1.4
Wage earners, Dec. 15, total.....	1,088,190	1,065,283	2.1
Above ground.....	382,230	366,962	4.2
Below ground.....	705,960	698,321	1.1
Power used (horsepower).....	6,724,057	4,608,253	45.9
Capital.....	\$6,955,466,831	\$3,380,525,841	105.8
Principal expenses:			
Salaries.....	149,328,985	53,393,551	179.7
Wages.....	1,285,928,275	586,774,079	120.9
Contract work.....	81,418,289	28,887,898	181.8
Supplies and materials.....	555,222,936	202,729,754	173.9
Fuel and power.....	122,095,769	45,136,550	170.5
Royalties and rents.....	174,393,730	63,873,585	172.6
Taxes.....	140,998,714	17,796,763	692.3
Value of products.....	\$3,228,023,845	\$1,238,410,322	160.7

¹ A minus sign(-) denotes decrease.

² Not available.

New York Central Railroad Plans Sales Campaign to Avert Winter Coal Shortage

NOW is a good time to buy coal, according to the New York Central R.R. The officials on this road have sufficient confidence in the public to believe that a direct appeal on the subject of coal will produce results. Coal represents an important part of the traffic on this railroad, as it does on many others, and coal in plentiful supply is equally or more essential to the continued and successful operation of the industries and public utilities in the large territory served by this important transportation system.

Instead of waiting for a possible coal-car shortage that would interfere with the industries as well as the railroad, these people are going before the traveling and coal-consuming public with a direct and plain statement of fact regarding coal—what it means to the carrier and what it means to the consumer.

The essential and important feature about the New York Central R.R. advertisement, which is appearing in newspapers throughout the country, East, West, North and South—Seattle, Los Angeles, San Francisco, New Orleans, Denver, St. Paul; in fact in every important city in the country and many smaller towns east of the Mississippi—is that no effort is made to scare the public into buying coal. The whole appeal is that of the salesman.

As representing the reasoning back of this and the feeling of helpful co-operation toward the coal industry animating the officials of this road, the following letter from G. N. Snider, coal traffic manager of the New York Central Lines, to C. H. B. Chapin, secretary, the Empire State Gas and Electric Association, Grand Central Terminal, New York City, will be interesting to readers of *Coal Age*:

QUOTES AUTHORITIES FOR "BUY-NOW" MOVEMENT

"Noting your letter of July 20 and its enclosed bulletin, No. 24, from the American Gas Association, quoting recent letters from Chairman Clark of the Interstate Commerce Commission and the Secretary of Commerce to the American Gas Association, urging the propriety of storing a winter supply of bituminous coal this summer at present prices, which, according to Secretary Hoover, are not too high.

"As very largely serving the gas and electric public utilities in New York State represented by your association, permit me to say for the New York Central R.R. that at the present time we have a very considerable unused surplus of cars and other transportation facilities, as indeed have all other railroads in this section of the country.

"At the present time we know that bituminous coal is being offered for immediate shipment at less than its actual cost of production and that as the wage scale contract prescribed by the U. S. Bituminous Coal Commission will not expire until March 31, 1922, there is almost no likelihood of a prior general reduction in the cost of mining coal.

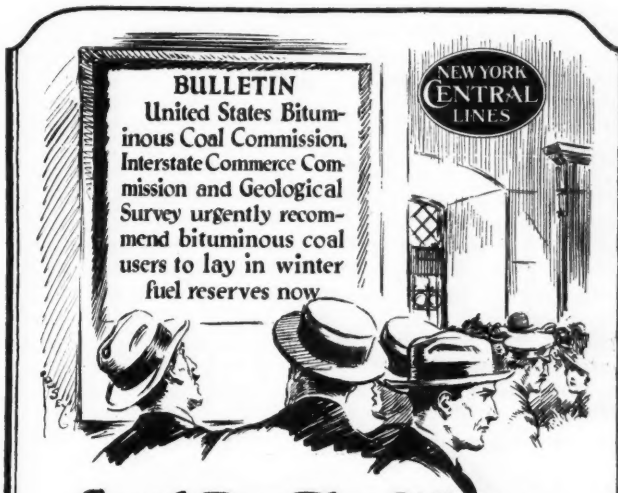
"In view of the time necessary to perform the mechanical work of providing general increases or decreases in railroad rates, and the fact that no general decreases on coal are now in contemplation, according to the published announcement of Chairman Clark of the Interstate Commerce Commission, there is almost no possibility of any reduction in coal rates before next April.

"For many years past the expiration of two-year wage contracts on March 31 has almost invariably caused mining in the bituminous coal regions to be suspended from one to two months thereafter while new agreements were being negotiated.

"Should we have very severe weather this coming winter (last winter having been unusually mild) this railroad will, as usual, do its utmost to move current coal shipments to public utilities and other users of coal, but there may be times when weather difficulties are practically insurmountable.

"In view of the various conditions outlined herein, and while adequate transportation is available and the coal market is such that the grade and quality of coal desired may be

readily secured, we believe that in the exercise of ordinary prudence and foresight the public utilities and other bituminous coal consumers should by all means provide themselves now with a sufficient reserve of bituminous coal both to carry them over any periods of interrupted winter service and to remove the pressure of their necessities from the first three months of next year if there is then in sight a considerable suspension of mining after April 1."



Coal For The Winter

Not many months ago, factories, public utilities and other large consumers of bituminous coal were buying any coal they could get, and paying any price demanded. Railroads were congested with coal trains moving from the mines, and long strings of "empties" going back for more. Freight cars had to be rationed for other commodities. All business suffered.

Now there is a surplus of both coal and transport. But the country is entering the harvest season when the movement of the crops creates a heavy demand for cars.

Coal consumers who now anticipate a portion of their winter needs by ordering fuel for early delivery have the advantage of a "buyers' market," and the certainty of prompt rail deliveries. The buyer of coal now can obtain the precise grade of fuel best suited for his use.

The New York Central Lines, consuming 12 to 15 million tons of coal a year for locomotive power, have built up their own fuel reserves as insurance against the uncertainties of the coming winter.

At the present time, we have facilities, and equipment for the movement of coal to industries along our Lines that have not yet made adequate provision for winter reserves.

NEW YORK CENTRAL LINES

BOSTON & ALBANY - MICHIGAN CENTRAL - BIG FOUR - LAKE ERIE & WESTERN
KANAWHA & MICHIGAN - TOLEDO & OHIO CENTRAL - PITTSBURGH & LAKE ERIE
NEW YORK CENTRAL AND SUBSIDIARY LINES

PREMIERE OF THE FIRST BIG NATIONAL COAL ADVERTISING CAMPAIGN

Commerce Commission Decides Coal Cases In Favor of Southern Illinois Field

THE decision of the Interstate Commerce Commission in the Illinois coal cases was announced Aug. 8. In these cases complaints were made assailing as unreasonable, discriminatory and prejudicial the rates on bituminous coal from mines in the Fulton-Peoria, Third Vein, Springfield and Belleville districts and from the so-called inner group, all in Illinois, to destinations in Illinois, Indiana, Iowa, Minnesota, Wisconsin, Michigan, Kansas, the Dakotas and Missouri. The commission rules as follows:

That the rates from the Third Vein, Springfield and Belleville districts to the Northwest are unduly prejudicial to the extent that they are less than 70 cents, 30 cents and 10 cents lower per ton, respectively than the rates from the Southern Illinois district to the same destination territory.

That the rates from the Fulton-Peoria district to certain points in Iowa are unduly prejudicial to the extent that they are less than 70 cents and 40 cents lower per ton than the rates from the southern Illinois and Springfield districts, respectively, to the same destinations.

That the rates from mines in the inner group to St. Louis and points in Missouri and southern Iowa, except Missouri river cities, to which the traffic moves through St. Louis, are unduly prejudicial to the extent that they are less than 22.5 cents lower per ton than the rates from mines in the southern Illinois group to the same destinations.

The commission also decided in the complaint of the Ohio Chamber of Commerce that the reconsignment rules and charges on coal and coke in all cars and on freight in open-top cars, effective August 20 last, in territory west of the Mississippi river on the lines of the C. B. & Q. are not unreasonable.

Central Pennsylvania Mine Workers Refuse To Consider Wage Decrease

IN RESPONSE to the communication from the Central Coal Association at Altoona, dated July 28, John Brophy, who has been asserting that he did not want a meeting with the operators because they had not said what they wanted to discuss, declares in a letter dated Aug. 4 that he will not consent to a meeting because the object of such a conference would be to discuss a wage reduction. He quotes John L. Lewis in saying that "There will be no reduction of wages in the organized sections of the coal-mining industry." He also quotes Lewis' declaration that the scale of wages was fixed by the U. S. Bituminous Commission created by the President, which is not true, for the present scale is a modification of that agreement resulting from continued strikes on the part of the mine workers. Even this agreement the mine workers of central Pennsylvania would not accept, though when it was posted by the operators the men went back to work.

Brophy declares that District No. 2 is in accord with John L. Lewis in his declaration against any wage reduction before April 1, 1922. Brophy further declares that Rule 26 of the present joint agreement reads "No agreement shall be made with any operator not a member of the association on a lower scale of wages or which shall provide for a reduction, under any circumstances, during the term thereof, which shall not be less than two years." Finally, Mr. Brophy says, there are matters that might be taken up with advantage to both parties, but wage questions are not among them. He would be glad to hold a conference to settle such matters.

Operators Oppose Rate Reduction of Ford

HENRY FORD'S efforts to effect freight reductions on his Detroit, Toledo & Ironton R.R. have given rise to a widespread belief that coal rates will be reduced generally. The reduction proposed by Mr. Ford is being protested by coal companies that would be discriminated against if the requested reductions were put into effect. There is no basis for such a belief. It is highly improbable that the Ford reductions will be granted and inquiry at the Interstate

Commerce Commission brings forth the emphatic declaration that no development in the rate-reduction matter is expected in the near future.

Referring to Henry Ford as "an over-zealous entrepreneur who should not be permitted" for purposes of his own to break down freight rates, "upon which a number of railroads principally depended for their livelihood," the Northern West Virginia Coal Association protested Aug. 5 to the Interstate Commerce Commission against coal-rate reductions proposed by Mr. Ford's road. The association was joined in its protest by other coal operators' organizations in the Harlan, Hazard and Southern Appalachian districts.

The protest declared that the reductions proposed on coal shipped from river points by the Detroit, Toledo & Ironton, as well as rates on coal originating at other points on the road, would break down the entire rate structure in the Ohio territory. The rate which it is proposed to reduce, it was explained, is fundamentally based upon the Hocking rate, which is the key tariff for the district.

Tidewater Exchange Revises Working Rules

THE revised rules of the Tidewater Coal Exchange, Inc. which were sent to the members this week show many changes, some of which are important. This work has been under way for several weeks by the Rules Committee and after several hearings with other committees representing the Exchange and the Carriers, has been finally completed.

Nothing definite could be learned concerning the changes but it was intimated that members may expect to see Rule No. 18, otherwise known as the Demurrage Rule greatly altered. This rule has been the bone of contention among the members of the Exchange, but it is believed that provisions of the new rule will obviate all trouble. Some rules, it was said, have been entirely eliminated, and changes have been made in others.

The schedules in bankruptcy of the old Tidewater Coal Exchange filed in the United States District Court of the Southern District of New York on August 8 show liabilities of \$2,402,779, and assets, including debt due on open accounts and bank deposits of \$2,385,228. The liabilities include \$801,275 due the United States in taxes and other debts, while the assets include \$1,952,799 due on demurrage charges.

Detective Shoots Down Sid Hatfield

C. E. LIVELY, who as a detective became a member of the United Mine Workers of America and later ran a little store in Matewan to gain the confidence of the strikers and keep track of their doings, on Aug. 1 met Sid Hatfield and Ed Chambers in the court-house yard in Welch, W. Va.

Bantering between Lively and Hatfield was followed by quarreling, and shots are said to have been fired by Lively, Hatfield and Chambers, in the course of which the two latter were killed. Smiling Sid was twenty-four years of age. He was born at Matewan, and worked in the mines. He became chief of police under Mayor C. C. Testerman.

Lively and four of his companions have been placed under arrest. Witnesses say that of two guns carried by Hatfield one had been discharged and that shells had been fired from Chambers' gun.

LEHIGH VALLEY, FACED BY STRIKE, CLOSES COLLIERY FOR REPAIRS.—On July 28 the Twin Shaft of the Seneca Colliery, at Pittston, Pa., was shut down over a wage dispute. The Lehigh Valley Coal Co., which owns the mine, decided that it was a good time to make repairs and closed the mine down. The general grievance committee of the Lehigh Valley Coal Co. has been considering several grievances presented at the many collieries of that corporation, among others that of No. 9 Colliery, Sugar Notch, where the men struck twice with but one intervening day at work, the dispute being about the seniority rights of a breaker boy. Last reports are to the effect that eight out of thirteen collieries in the northern field owned by the Lehigh Valley are on strike.

Governor's "Ad" Urges Alabama Domestic Coal Users To Buy Now; Fixes Sliding Margin

THAT there is certain to be a serious coal shortage during the coming winter unless domestic consumers lay in a supply for winter use as soon as possible, is the warning issued by Roy R. Cox, Acting State Fuel Administrator of Alabama. Failure of domestic coal consumers to buy when their needs can be easily supplied, together with the unusual laxness of the steam coal market, it is stated, has created a situation equal in seriousness to that with which the people of Alabama were confronted last winter, as it is impossible for the railroads to handle or the retailers to receive and deliver a full winter's supply of coal during the winter months alone.

Realizing the seriousness of the situation, the Governor and a committee of the domestic coal producers concluded to advise citizens through advertisements, one of which is reproduced on this page, as to prices of coal at the mines and established freight rates, and at the same time Governor Kilby, through the Fuel Administration, is endeavoring to prescribe a reasonable gross margin of profit to be charged by retailers. Owing to fixed overhead expenses which must be met by the retailer throughout the year, the margin determined is higher than it would be if the coal business were normal or nearly so.

The margin is divided into four classes: First, the cities of Birmingham, Montgomery and Mobile; second, all other towns of 6,000 population and over; third, all towns of 3,000 and up to 6,000 population; fourth, all towns of less than 3,000 population, and all dealers who do not maintain a coal yard but who deliver from the car to the consumer's bin, by contract or otherwise. For the first class a margin of \$3.30 is considered fair, and in order that retailers in these cities may be able to offer some inducement to consumers to buy their coal at this time, the margin has been put on a sliding scale, lower at the present time, and increasing month by month, as follows: August, \$3.10; September, \$3.20; October, \$3.30; November, \$3.40; December, \$3.50. For the second class, \$2.80; for the third class, \$2.50, and for the fourth class, \$1 plus the cost of unloading and delivery.

TEXT OF WARNING ISSUED BY ACTING FUEL ADMINISTRATOR

The complete text of the Fuel Administration's announcement, issued by Acting Fuel Administrator Cox, follows:

Due to the fact that domestic coal consumers are not laying in a supply of coal against the winter's needs, and to the further fact of the unusual laxness in the steam-coal market a situation confronts us of equal seriousness with that which we went through last winter. Excepting the very few operators who are fortunate enough to have railroad and other public utility contracts for steam coal, no mine operators are working more than two days a week, and some of those mines which are working on a normal basis are steam-coal mines strictly, and produce no domestic coal whatever, and at the same time the domestic coal consumers are not buying in anything like normal summer quantities. The result of this latter condition is that the retail dealers who are able to get coal at all on their contracts have their yards stocked, and are unable to take more because of their inability to make any sales. Unless relief is obtained, these conditions will certainly result in a serious coal shortage during the winter, for it is impossible for the railroads to handle or the retailers to receive and deliver a full winter's supply of coal during the winter months alone.

Realizing the seriousness of the situation, and in an effort to ward against the possible shortage, the Governor and a committee of the domestic coal producers concluded to advise the public through advertisements in the newspapers of the state, of the facts regarding prices of coal at the mines and the established freight rates, and in addition the Governor, through the Fuel Administration, is undertaking to name a reasonable gross margin of profit to be charged by retailers. On Sunday, July 31, and Monday, Aug. 1, there will appear in the papers of Birmingham, Mobile and Montgomery, a display advertisement showing the prices at the mines for August, of domestic coal from 28 mines, which includes all the domestic coal producing mines in the state. This will be followed by advertisements showing prices for the retailer in 11 towns in representative sections of the state, and the established freight rate on each of the 28 coals to each of

such towns. Further information regarding prices and freight rates will be furnished by the Fuel Administration upon request made to the Acting Fuel Administrator at Montgomery.

As thorough an investigation as is practical has been made into the whole subject, and the Fuel Administration does not see any hope of reduction in either mine prices or retail prices. This department would not be able to state whether the prices being charged at the mines are proper and reasonable without first going into extensive and time-consuming audits of the books of the operators, which has not been considered practicable for the purposes of this investigation. It can safely be stated, however, that the mines are operated on a fixed heavy overhead expense, including pumping and ventilating plants, which is just the same whether the mines operate full time, half time, or are shut down, and with the mines running now only two days a week, and the market such that steam coal, which comprises 65 per cent of the whole output from the domestic producing mines, is necessarily sold for less than the cost of production, the claim of the operators that they are running at a heavy loss on present domestic prices must be given full credence. It looks to be a question of coal at high prices or no coal at all, for the operators cannot be expected to run indefinitely and stand these heavy losses. It should be understood, however, that this department, in making this statement, is of the opinion that if coal production and coal sales were normal, the prices could and should be very much cheaper.

The question of margin of profit of the retailer is affected by the same condition that confronts the operator, namely, the small amount of business now being done as compared with a normal summer season. The retailer has a fixed overhead expense that runs on regardless of whether he is selling any coal or not, so that any margin that would net him a fair profit in normal times would not enable him to pay expenses at this time. The margin that has been determined upon is higher, therefore, than would be named if the coal business was normal, or nearly so.

The margin is divided into four classes: First, the cities of Birmingham, Mobile and Montgomery; second, all other towns of 6,000 population and over; third, all towns of 3,000 and up to

STATE OF ALABAMA STATE FUEL ADMINISTRATION

Montgomery, August 1, 1921

To The Domestic Coal Consumers of Alabama:

For several weeks the State Fuel Administration, under the direction of the Governor, has been gathering data for the purpose of furnishing information to the public as to what prices they should have to pay for coal, both at this time and during the winter months. Such information is given in the table below, and is as complete as it has been possible to make it.

An effort has been made to be fair to the public, to the retailers and to the coal operators. The Fuel Administration believes there is no hope for any reduction in these prices and is convinced that it is the part of wisdom to advise all coal consumers to place their orders now. Buying now by the consumers will enable the retailers to handle more coal during the summer months, thereby enabling the mines to operate a greater percentage of the time, which will insure a greater production for the winter's needs; and the railroads are better able to transport the coal now than they will be later on.

This table shows the August prices at the twenty-eight mines in the state which produce domestic coal. The prices are from ten to twenty-five cents higher than were the July prices, and will continue to advance through November. The table also shows what is considered to be a reasonable gross margin of profit for retailers in eleven towns in representative sections of Alabama, together with the freight rate on each of those coals to each of such towns. Any consumer may determine from this table what his retailer should charge for coal throughout August, for example, the maximum prices per ton delivered to home of consumer at Montgomery during August on a low price and a high price grade are arrived at as follows:

	Gamble	Monteville
F. O. B. mine price.....	\$3.25	\$7.10
Freight rate.....	\$2.06	\$1.87
War tax on freight (3 per cent).....	\$0.06	\$0.05
Retailer's gross margin.....	\$3.10	\$3.10

DELIVERED COST TO HOUSEHOLDERS.....\$8.37 \$12.03

Other advertisements will be run at later dates, showing the prices for the succeeding months. The State Fuel Administration will furnish information about prices of coal, and freight rates to any point in Alabama, upon request to this office.

ROY R. COX, Acting Fuel Administrator.

THE FOLLOWING ARE THE AUGUST PRICES PER TON (2,000 POUNDS) F. O. B. RAILROAD CARS AT MINES, TOGETHER WITH THE FREIGHT RATES PER TON (2,000 POUNDS) TO, AND RETAILERS' GROSS MARGINS AT, REPRESENTATIVE POINTS IN THE STATE, ON ALL THE LUMP COALS NOW BEING MINED IN ALABAMA:

Coal Field	Price	Freight Rate	Gross Margin	Price	Freight Rate	Gross Margin	Price	Freight Rate	Gross Margin
Gamble	\$3.25	\$2.06	\$1.87	\$1.87	\$1.87	\$1.87	\$1.87	\$1.87	\$1.87
Columet	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Caladon	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Savoy	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Pratt	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Acmar	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Altoona	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Bernd	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Cedron	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Carbon Hill	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Coahly	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Corona	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Deerling	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Brilliant	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Empire	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Patty	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Calhoun Field	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Belle Elie	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Garnsey	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Burke	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Arton	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Cumby	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Naval	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Buckhorn	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Stevens	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Culmore	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Piper	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Dugwood	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Monteville	\$3.50	\$2.25	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Retailer's Gross Margin	\$3.10	\$2.80	\$2.50	\$2.20	\$2.00	\$1.80	\$1.60	\$1.40	\$1.20

REPRODUCTION OF GOVERNOR KILBY'S 10 x 14 IN. "AD" TO ALABAMA DOMESTIC COAL USERS

6,000 population, and fourth, all towns of less than 3,000 population and all dealers who do not maintain a coal yard but who deliver from the car to the consumer's bin, by contract or otherwise. For the first class, a margin of \$3.30 is considered fair, but in order that the retailers in these cities may be enabled to offer some inducement to consumers to buy their coal at this time the margin has been put on a sliding scale, lower now, and increasing month by month. The scale is as follows: August, \$3.10; September, \$3.20; October, \$3.30; November, \$3.40; December, \$3.50. For the second class, \$2.80; for the third class, \$2.50, and for the fourth class, \$1.00, plus the cost of unloading and delivery.

The freight rates quoted in the table to be published are the present established rates, to which should be added in each instance 3 per cent for war tax. There has been a good deal of publicity given to a supposed reduction in freight rates on coal at some early date. The Fuel Administration, from its investigation, is convinced that no reduction whatever is to be expected sufficiently early to affect the prices of coal the coming winter. On June 16, Mr. Hoover, Secretary of Commerce, publicly stated that the railroads and the representatives of the coal industry had been unable to reach any conclusion as to the proposed reduction in freight rates on coal, and that no voluntary agreement thereon was to be expected. On June 22, Chairman Clark, of the Interstate Commerce Commission, publicly stated as follows:

"I regard it as extremely unfortunate that there should have been so much agitation in regard to an early reduction in rates on coal or other commodities, and, in some instances, on freight traffic generally. I think that the result of these rumors, which in the main have no real foundation, has been to stagnate industry and commerce. There is not to my knowledge now pending before the commission any formal proceedings in which general reductions of coal rates under Section 1 of the act are sought."

Daily Press of United States More Moderate In Articles Relating to Coal

DAILY newspapers of the United States, in the opinion of a Philadelphia editor, are beginning to show gratifying growth of sanity in articles relating to coal. The change is especially noticeable in the press of New England, from which locality has emanated much wild talk concerning coal since 1917.

The *Boston Commercial Bulletin*, in its issue of July 16, has an unusually clear article on the steam sizes. The paper says that although people complain that the price of hard coal is increasing while other commodity costs are decreasing, the coal companies are far from prosperous, owing to high wages, inefficient labor, costly materials, and, in some cases, excessive royalties. It is laid down that one way to escape this is to make use of the steam sizes for domestic purposes. This, it is pointed out, will help the consumer by giving a proportion of cheaper fuel, and it will also help the operator by giving him a fair price, or something a little nearer a fair price, for these byproduct sizes. This, the paper thinks, will check increases in the cost of prepared sizes. There is given some good, simple advice on the use of steam sizes, particularly by means of a simple blower attachment, and the methods used in the firing of river coal in Harrisburg are cited.

Equally sensible talk appears in the *Springfield Union* of July 17, wherein a special article written by J. H. Fifield recommends the purchasing of household fuel now. He says that it is a fallacy to think coal will be any cheaper in the autumn, and he gives it as his opinion—not backed by facts, to be sure—that coal will get dearer every month until next April. Mr. Fifield says that the proper course for New England consumers is to buy at once. He does not think it is necessary for consumers, who might be seriously inconvenienced, to put in the whole winter's supply, but he does urge small-lot buying, and says that this will save the situation if it be generally applied. He makes it clear that the only considerable storage space available for household coal is in the cellars of consumers. His article is carefully written, and goes into much detail regarding new taxes, circular prices, market conditions which affect spot coal, etc. He truly says that if demand is put off until the winter it becomes not so much a question of getting the coal as of inability to handle it.

The *Knickerbocker Press*, of Albany, N. Y., says editorially that anthracite will not be cheaper this year. It goes

into great length on the physical problems in anthracite mining and the effects of legislation and high wages on the cost of production. The effect of high royalties is set out, and the disasters of government management, as exemplified in England, are referred to. Here is this paper's view:

"The solution of the coal situation is to get back to a peace-time basis, step by step, along with the other types of industry as to the wage rate; to educate some of the United States Senators and Representatives and state Legislatures and impress them with the danger of tampering with so staple an industry; to create an interest on the part of the people generally so that they will study this great question; to keep coal moving direct to the consumers' storage, whether it be in their cellar bins for heating and cooking purposes or their storage yards for steaming purposes." Otherwise, the paper thinks, bituminous coal, coke, carbocool and domestic grades of bituminous are going to crowd anthracite from the market.

Coal-Mine Fatalities Decrease with Curtailment of Production

REPORTS to the U. S. Bureau of Mines from the various Rstate mine inspectors show that 155 men were killed by accidents at coal mines in June, 1921, representing a decrease of 64 fatalities, or about 29 per cent, from the record for the same month last year. Based upon an estimated production of 42,106,000 net tons in June, 1921, the fatality rate is 3.68 per million tons produced, as compared with a rate of 4.22 for June a year ago. An interesting feature of bituminous coal-mining operations in June was the entire freedom from fatal accidents caused by explosions of gas or coal dust. The anthracite industry was less fortunate, as several small explosions of gas resulted in the loss of five lives.

At the anthracite mines in Pennsylvania 40 men were killed, while 115 men lost their lives at bituminous mines throughout the country. West Virginia lost 32 men by accidents at bituminous mines, followed by Pennsylvania with 21, Illinois 17, Ohio and Kentucky 7 each, Indiana 6, and 5 each in Alabama and Colorado.

During the first half of the present year 970 men were killed by accidents at coal mines, against 1,093 during the first half of 1920, a decrease of 123, or about 11 per cent. For the same months the output of coal was 242,000,000 tons for 1921 and 301,000,000 for 1920, a decrease of 59,000,000 tons, or nearly 20 per cent. These figures represent a fatality rate of 4.01 per million tons mined in 1921 and 3.63 per million tons mined in 1920.

Drop in Living Cost Less Than 1 Per Cent Between June 1 and July 1

THE cost of living of wage earners in the United States, according to figures recently issued by the National Industrial Conference Board, decreased less than 1 per cent as a whole between June 1 and July 1. As the record stands, the cost of living July 1 was 61.6 per cent above the average in July, 1914.

It is just one year since the Anthracite Commission concluded its hearings in Scranton, where the existing cost of living was so stressed by the representatives of the mine workers as a reason for an increased wage scale. The Conference Board's report shows that, compared with the cost of living last July, this year (July 1) shows a decline of 21 per cent.

In detail, the changes, as of July 1, from living costs in July, 1920, are as follows: Food, 34.2 per cent decrease; shelter, 8.2 per cent increase; clothing, 38.7 per cent decrease; fuel, 1 per cent decrease; light, 34.8 per cent increase; sundries, no change; weighted average all items, 21 per cent decrease.

ALL THE COAL DEALERS ask are high prices and low temperatures, and they'll do the rest—cf us.—*Brooklyn Eagle*.

Opposing Elimination of Cotton Exchanges, Senator Ransdell Urges Formation of Coal Exchange

LEGISLATION has been initiated by Senator Dial, of South Carolina, which if enacted into law would destroy the cotton exchanges. He argues that the price of cotton is depressed by the action of these exchanges. In meeting that argument, Senator Ransdell, of Louisiana, has information to the effect that there is sentiment in the administration for a coal exchange as an important step necessary to the stabilization of the coal industry. It is known that this plan is regarded as being sound by eminent engineers and economists. His information is to the effect that a proposition to establish a coal exchange will be brought forward in the near future in the hope that it ultimately will be established, so as to reduce the fluctuations in the prices of coal and to contribute generally to the stabilization of the industry. His information is that producers of coal in general favor such a proposition. While Senator Ransdell's interest in a coal exchange may be ascribed largely to his desire to meet the attack being made on cotton exchanges, it is expected that the use of that example will have the effect of precipitating the discussion of the merits to the coal industry of such an establishment.

In this connection it develops that the matter has been the subject of some discussion within the American Wholesale Coal Association, and its managing director, George

H. Cushing, has gone on record, in substance, as follows:

"I have been a firm believer for years in a coal exchange. It is an ideal for which we should work, but its prompt development hardly is possible. Before coal can be dealt in on an exchange there must be a classification and a gradation of the coal. There must be a very thorough inspection system. Coal is not a commodity that can be measured by engineering work. Its value depends many times upon the use to which it is put. It varies in quality in different parts of the same mine. It varies in quality between mines in the same field. Classification is difficult. Schemes of classification that have been developed hardly are practicable. The double basis of classification presents a very difficult but perhaps not an insurmountable obstacle.

"Coal cannot be inspected as can grain and lumber. Those commodities need be subjected only to an ocular test to prove their quality. In coal it is a matter of chemical determination, which not only involves elaborate and costly sampling, but which requires time. The establishment of an exchange must be predicated on the possibility of first grading the coal, and then inspecting it. To work this out will take time. Any revolution within an industry requires patient work, but the benefits which would come to the industry will be such as to justify the effort."

Says Industrial Court Increased Kansas Miners' Working Opportunities

AFTER a year and a half of operation, the Kansas Court of Industrial Relations has more than justified its organization, according to a statement by Governor Henry J. Allen, issued July 25.

"Each of the twenty-eight orders and judgments of the court rendered thus far has been accepted by both sides of the controversy excepting the last, which is now pending on appeal before the State Supreme Court," Governor Allen said. "Employers and employees alike are coming to regard the court as an up-to-date method for settling industrial disputes.

"The result in the coal mining district has been most striking. Under conditions created by the Industrial Court last year the miners were enabled to work 30 per cent more than the year before, with the resultant increase in production of fuel for the public and wages to the miners."

Duluth-Superior Coal Receipts, July, 1921, Nearly Double Those of July, 1920

COAL receipts at Duluth and Superior from July 1 to Aug. 1, as compared with the same period in 1920, were as follows, in net tons:

	1920		1921	
	Anth.	Bit.	Anth.	Bit.
Northwestern.....	43,000	67,100	112,000	264,000
Berwind.....		52,500		83,500
Pittsburgh.....	38,000	81,800	56,700	238,800
Carnegie.....	42,300	45,000	23,500	127,300
Hanna.....	21,000	74,600	33,500	95,400
Reeves.....		7,500	6,100	35,800
Boston.....		28,000	9,500	32,600
Inland.....		42,000	7,500	89,000
Clarkson.....		7,700	9,700	70,800
Northern.....	18,400	26,700	59,200	70,800
Zenith Furnace.....		9,700	21,000	76,300
Philadelphia & Reading.....		225,400		168,200
Corporation.....	15,300	23,700	21,300	82,700
Reiss.....		6,700		34,700
Purglove.....	33,700		19,300	
Leligh.....		28,000	9,200	46,300
Great Lakes.....				

July receipts..... 211,700 726,400 329,300 1,634,100
Total to July 1st..... 392,070 959,000 456,600 3,788,400

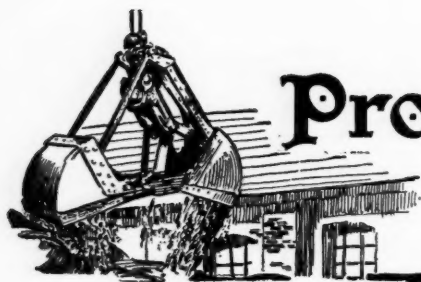
Total to Aug. 1st..... 603,770 1,685,400 785,900 5,422,500
Anthracite receipts in excess of last year, 182,130 tons.
Bituminous receipts in excess of last year, 3,737,100 tons.

Coal Consumption by Electric Plants, January-June, Far Below Last Year

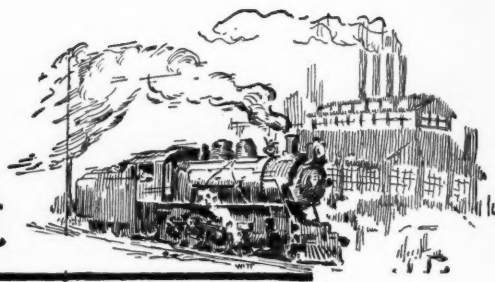
ELECTRIC power produced during January, February, March, April and May, 1920 and 1921, according to the United States Geological Survey, required the combustion of coal indicated in the following table, net tons:

State	January	February	1921 March	April	May
Alabama.....	8,839	8,675	8,050	7,241	13,335
Arizona.....	626	675	575	580	150
Arkansas.....	11,604	11,712	11,324	12,222	11,919
California.....	0	0	0	0	0
Colorado.....	32,452	27,928	28,654	28,104	26,654
Connecticut.....	56,183	53,216	50,438	46,743	48,382
Delaware.....	9,106	8,070	7,895	6,799	6,657
District of Columbia.....	21,703	18,901	19,572	18,279	18,768
Florida.....	2,197	2,200	1,926	2,047	2,003
Georgia.....	8,184	7,171	6,549	6,681	5,943
Idaho.....	0	0	0	0	0
Illinois.....	375,066	327,122	334,651	304,497	304,497
Indiana.....	171,857	152,634	158,590	150,495	146,620
Iowa.....	89,984	78,335	75,141	68,280	64,363
Kansas.....	44,374	33,756	30,836	22,955	21,318
Kentucky.....	43,436	38,935	39,950	37,427	38,482
Louisiana.....	13,198	12,034	11,917	10,065	9,338
Maine.....	51	39	104	140	198
Maryland.....	24,559	18,283	16,586	16,215	18,210
Massachusetts.....	128,173	124,261	103,130	88,797	93,453
Michigan.....	119,109	109,963	111,136	108,094	106,987
Minnesota.....	54,853	50,434	40,437	22,647	23,914
Mississippi.....	12,121	11,085	10,785	9,352	9,352
Missouri.....	110,001	94,486	95,948	88,916	88,391
Montana.....	3,698	3,682	3,799	3,336	3,561
Nebraska.....	41,710	36,463	35,186	32,661	31,808
Nevada.....	221	184	176	180	117
New Hampshire.....	3,557	2,769	2,314	2,234	2,682
New Jersey.....	117,410	100,255	96,130	89,467	92,664
New Mexico.....	4,129	3,449	3,664	3,368	2,406
New York.....	405,664	352,402	360,255	343,910	338,350
North Carolina.....	8,385	7,254	7,493	6,558	6,712
North Dakota.....	16,739	14,716	14,716	12,224	12,059
Ohio.....	303,599	268,859	284,825	258,952	244,179
Oklahoma.....	12,409	7,992	5,172	4,487	3,968
Oregon.....	165	126	120	119	65
Pennsylvania.....	446,380	411,025	409,437	376,968	384,521
Rhode Island.....	13,843	12,044	11,546	11,085	9,607
South Carolina.....	9,301	8,845	9,288	10,270	6,471
South Dakota.....	8,162	7,384	6,690	5,950	5,467
Tennessee.....	23,422	19,606	21,136	19,253	18,244
Texas.....	20,361	15,474	20,034	22,045	19,590
Utah.....	11	5	0	0	0
Vermont.....	193	0	181	58	14
Virginia.....	38,425	30,472	32,932	30,809	32,021
Washington.....	3,583	3,108	3,219	2,828	2,482
West Virginia.....	85,459	79,204	81,675	77,375	89,425
Wisconsin.....	70,463	60,900	58,504	45,035	46,269
Wyoming.....	9,189	7,822	7,902	6,747	6,732

Totals..... 2,984,154 2,643,955 2,640,588 2,422,495 2,418,348
Totals for corresponding months, 1920..... 3,593,755 3,251,027 3,263,159 2,929,462 2,836,664



Production and the Market



Weekly Review

PRODUCTION of bituminous coal holds steadily at the low rate of about one and a quarter million tons a day or just over 7,300,000 tons a week. The output in July is tentatively estimated at 30,394,000 tons, a decrease of 3,502,000 tons below June. This record for July was 4,000,000 tons below that of July, 1914, a year of business depression, and shows the widespread extent of the existing industrial inactivity. It is pointed out by the Geological Survey that at the rate for the seven months to the end of July, the year 1921 will record an output of soft coal less than 400,000,000 tons. No year since 1909 has seen such a poor demand. Compared with an average of eight preceding years, production in 1921 is now 52,000,000 in arrears.

Production of anthracite has likewise begun to fall. For the past six weeks the failure of demand for certain of the domestic sizes has caused heavy accumulations not only in retail yards but in producers' storage piles, and the prices on these sizes from independent producers have been receding week by week. One after another small operation has closed for lack of business at prices offering not even a return of production costs, and now local strikes have appeared to close operations of some of the larger companies.

It is exceedingly significant that in twenty-five bituminous coal-producing districts east of the Mississippi,

according to the reports of the Geological Survey for the week ended July 23, but nine were operating half-time or better and of the nine, one, Eastern Ohio, pays tribute to the United Mine Workers, the others, Somerset, Cumberland, Piedmont, Tug River, Logan, Hazard, Harlan, Southwestern Virginia and Alabama, all being either entirely non-union or bound to the check-off by very loose ties, as the Maryland field. West of the Mississippi practically every state is reporting operating time 50 per cent or better.

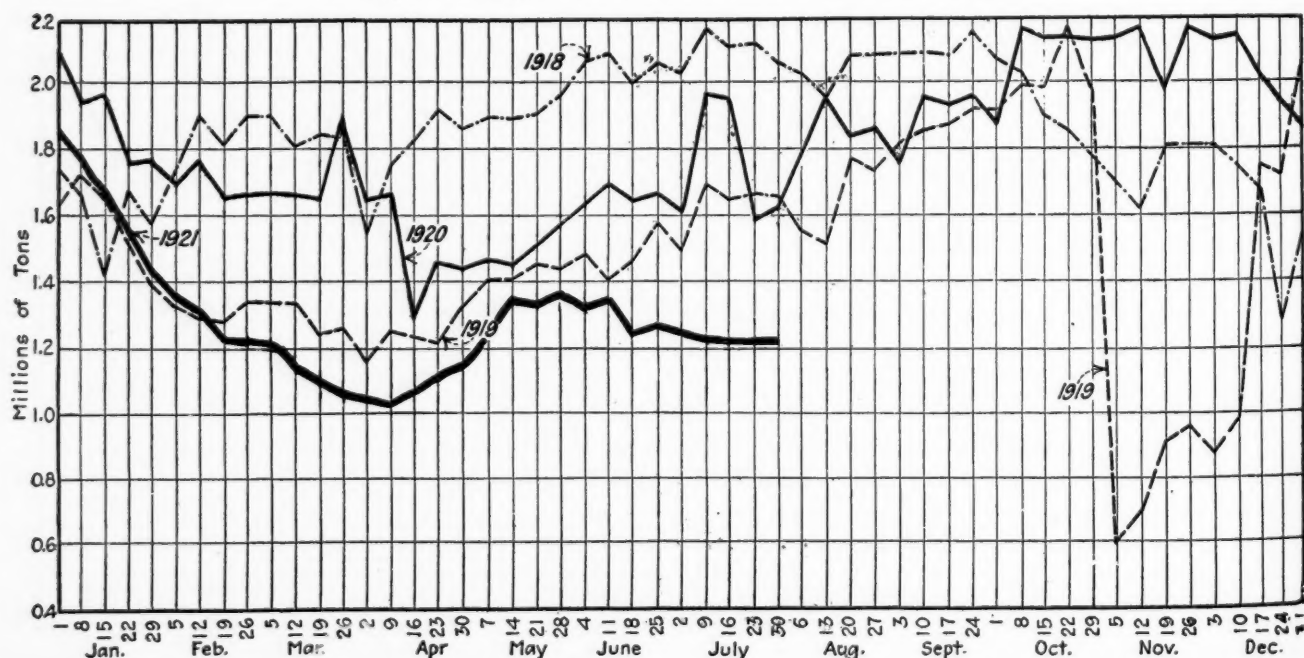
SCREENINGS SHOW COMPARATIVE PRICE STRENGTH

That there have been no serious declines in prices of soft coal is due more to the relative strength of screenings, now in comparatively short supply because the mines are not producing lump coal for retail trade or for shipment up the Lakes, than to any other feature.

Coal Age index of spot prices for bituminous coal is unchanged at 90, several slight advances counterbalancing a decline in Pocahontas.

Anthracite shippers are taking advantage of the lull in Eastern demand to increase the movement up Lakes, shipments through Buffalo having been 185,900 tons in the week of July 23, the greatest this year, exceeding by 65,000 tons the week preceding. More than half the total is going to Duluth-Superior.

Daily Average Production of Bituminous Coal*



*From weekly report of Geological Survey.

Despite the absence of any encouraging news in the statistics of production, price and distribution, there is a general feeling, perhaps engendered by the cooler weather with which August opened, that soon—very soon—business is coming back with some of the old time vigor. Many say they have already visible evidence in the form of definite inquiries. Some buying of bargain lots is proceeding for fall and winter reserves, and here and there buyers with short-term contracts are taking more coal in anticipation of higher prices later.

BITUMINOUS

The output during the last week of July was 7,361,000 net tons, a slight decline from the figures of the two preceding weeks. Production has hovered around the 1,250,000-ton mark for the last three weeks and early reports of loadings suggest but a slight decline in output for the first week in August.

The railroads serving New England report a decrease in the quantity of anthracite forwarded over the Hudson gateways, but no change in the movement of bituminous coal. A total of 2,543 cars of anthracite and 3,029 cars of bituminous were forwarded as against 3,160 and 3,018 cars, respectively, during the week preceding. In the corresponding week of 1920 the anthracite amounted to 2,806

cars and the bituminous 6,368 cars, according to figures furnished by the American Railway Association.

CARS OF COAL FORWARDED OVER THE HUDSON TO NEW ENGLAND

Week Ended	1921		1920	
	Anthracite	Bituminous	Anthracite	Bituminous
July 16.....	3,090	2,444	2,066	6,154
July 23.....	3,160	3,018	2,377	7,033
July 30.....	2,543	3,029	2,806	6,368

In addition to the weekly record of cars of coal passing eastbound through the Hudson gateways, which furnishes a rough current index of the New England rail movement, there are available in monthly form from the Massachusetts Fuel Administration much more accurate records of the tonnage actually received at New England.

RECEIPTS OF ANTHRACITE AND BITUMINOUS COAL IN NEW ENGLAND

Anthracite	By Tide		All-Rail		Total
	1921	1920	1921	1920	
March, 1921.....	304,341		898,645		1,202,986
April, 1921.....	305,703		598,897		904,600
May, 1921.....	373,976		666,702		1,040,678
Year to May 31, 1921.....	1,649,770		3,571,846		5,221,616
Year to May 31, 1920.....	1,259,717		2,767,307		4,027,024
Year to May 31, 1919.....	1,142,262		2,675,752		3,818,014
Bituminous					
March, 1921.....	594,012		741,306		1,335,318
April, 1921.....	603,917		585,797		1,189,714
May, 1921.....	587,684		649,914		1,237,598
Year to May 31, 1921.....	3,036,465		3,678,556		6,715,021
Year to May 31, 1920.....	3,895,061		3,870,677		7,765,738
Year to May 31, 1919.....	3,325,351		3,360,303		6,685,654

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

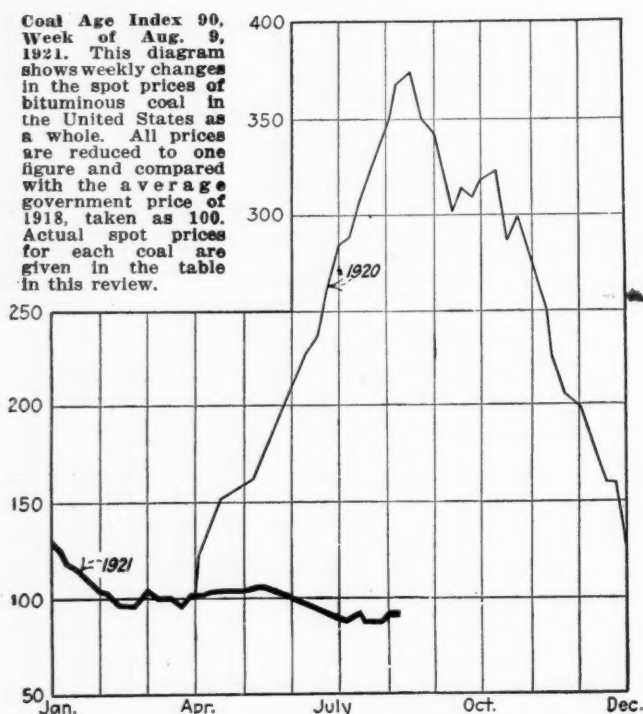
Low-Volatile, Eastern						Midwest					
	Market Quoted	July 5, 1921	July 26, 1921	Aug. 2, 1921	Aug. 9, 1921†		Market Quoted	July 5, 1921	July 26, 1921	Aug. 2, 1921	Aug. 9, 1921†
Pocahontas lump.....	Columbus.....	\$5.75	\$5.40	\$5.25	<i>\$5.00@ \$5.25</i>	Pitts. No. 8 mine run.....	Cleveland.....	\$2.20	\$2.20	\$2.30	<i>\$2.25@ \$2.35</i>
Pocahontas mine run.....	Columbus.....	3.25	3.15	3.15	<i>2.75@ 3.00</i>	Pitts. No. 8 screenings.....	Cleveland.....	1.20	1.35	1.45	<i>1.70@ 1.85</i>
Pocahontas screenings.....	Columbus.....	2.35	2.30	2.40	<i>2.00@ 2.25</i>	Midwest					
Pocahontas lump.....	Chicago.....	5.65	5.15	5.40	<i>4.75@ 5.25</i>	Franklin, Ill. lump.....	Chicago.....	3.80	3.55	3.55	3.00@ 4.05
Pocahontas mine run.....	Chicago.....	2.50	3.15	3.00	<i>2.50@ 3.00</i>	Franklin, Ill. mine run.....	Chicago.....	2.90	3.15	3.15	2.75@ 3.55
*Smokeless mine run.....	Boston.....	5.90	5.70	5.60	<i>5.50@ 5.65</i>	Franklin, Ill. screenings.....	Chicago.....	1.90	1.90	1.90	1.85@ 2.00
Clearfield mine run.....	Boston.....	2.10	1.95	1.90	<i>1.65@ 2.15</i>	Central, Ill. lump.....	Chicago.....	2.65	2.50	2.50	<i>2.50@ 3.00</i>
Cambria mine run.....	Boston.....	2.80	2.70	2.70	<i>2.25@ 2.85</i>	Central, Ill. mine run.....	Chicago.....	2.40	2.25	2.25	<i>1.90@ 2.50</i>
Somerset mine run.....	Boston.....	1.90	1.75	1.75	<i>1.50@ 1.90</i>	Central, Ill. screenings.....	Chicago.....	1.65	1.60	1.60	<i>1.40@ 1.75</i>
Pool 1 (Navy Standard).....	New York.....	3.15	3.15	3.15	<i>3.00@ 3.25</i>	Ind. 4th Vein lump.....	Chicago.....	2.90	3.65	3.60	3.50@ 3.65
Pool 1 (Navy Standard).....	Philadelphia.....	2.80	2.80	2.80	<i>2.85@ 3.00</i>	Ind. 4th Vein mine run.....	Chicago.....	2.50	3.05	3.10	2.90@ 3.25
Pool 1 (Navy Standard).....	Baltimore.....	2.75	2.45	2.40	<i>2.40@ 2.50</i>	Ind. 4th Vein screenings.....	Chicago.....	1.70	2.15	2.15	2.00@ 2.25
Pool 9 (Super. Low Vol.).....	New York.....	2.55	2.50	2.60	<i>2.35@ 2.75</i>	Ind. 5th Vein lump.....	Chicago.....	2.75	2.90	2.90	2.75@ 3.00
Pool 9 (Super. Low Vol.).....	Philadelphia.....	2.40	2.40	2.40	<i>2.25@ 2.40</i>	Ind. 5th Vein mine run.....	Chicago.....	2.40	2.60	2.45	2.25@ 2.65
Pool 9 (Super. Low Vol.).....	Baltimore.....	2.55	2.20	2.20	<i>2.15@ 2.25</i>	Ind. 5th Vein screenings.....	Chicago.....	1.70	1.90	1.65	1.50@ 1.75
Pool 10 (H. Gr. Low Vol.).....	New York.....	2.25	2.25	2.35	<i>2.15@ 2.50</i>	Standard lump.....	St. Louis.....	2.25	2.25	2.25	<i>2.00@ 2.40</i>
Pool 10 (H. Gr. Low Vol.).....	Philadelphia.....	2.20	2.20	2.20	<i>1.90@ 2.15</i>	Standard mine run.....	St. Louis.....	1.75	1.70	1.70	<i>1.75</i>
Pool 10 (H. Gr. Low Vol.).....	Baltimore.....	2.25	2.00	2.00	<i>2.00</i>	Standard screenings.....	St. Louis.....	0.85	1.00	1.00	<i>1.00@ 1.25</i>
Pool 11 (Low Vol.).....	New York.....	1.95	1.90	1.95	<i>1.85@ 2.00</i>	West Ky. lump.....	Louisville.....	2.75	2.90	2.95	<i>2.60@ 3.40</i>
Pool 11 (Low Vol.).....	Philadelphia.....	1.90	1.90	1.90	<i>1.65@ 1.85</i>	West Ky. mine run.....	Louisville.....	2.10	2.30	2.35	<i>1.90@ 2.55</i>
Pool 11 (Low Vol.).....	Baltimore.....	2.10	1.75	1.75	<i>1.70</i>	West Ky. screenings.....	Louisville.....	1.45	1.55	1.65	<i>1.40@ 2.00</i>
High-Volatile, Eastern						South and Southwest					
Pool 54-64 (Gas and Steam).....	New York.....	2.00	1.70	1.75	<i>1.70@ 2.00</i>	Big Seam lump.....	Birmingham.....	3.50	3.55	3.55	<i>3.25@ 4.20</i>
Pool 54-64 (Gas and Steam).....	Philadelphia.....	1.75	1.75	1.75	<i>1.50@ 1.75</i>	Big Seam mine run.....	Birmingham.....	2.25	2.15	2.15	2.00@ 2.25
Pool 54-64 (Gas and Steam).....	Baltimore.....	1.85	1.50	1.50	<i>1.40@ 1.60</i>	S. E. Ky. lump.....	Louisville.....	3.45	3.15	3.50	<i>3.50@ 3.65</i>
Pittsburgh ec'd. gas.....	Pittsburgh.....	2.50	2.95	2.70	<i>2.60@ 2.80</i>	S. E. Ky. mine run.....	Louisville.....	2.25	2.20	2.35	<i>2.15@ 2.40</i>
Pittsburgh mine run (steam).....	Pittsburgh.....	1.85	2.10	2.10	<i>2.00@ 2.15</i>	S. E. Ky. screenings.....	Louisville.....	1.25	1.35	1.50	<i>1.50@ 1.75</i>
Pittsburgh slack (gas).....	Pittsburgh.....	1.60	1.45	1.70	<i>1.60@ 1.75</i>	Kansas lump.....	Kansas City.....	5.40	5.50	5.50	5.50
Kanawha lump.....	Columbus.....	3.40	3.15	2.90	<i>3.00@ 3.50</i>	Kansas mine run.....	Kansas City.....	4.25	4.40	4.40	4.40
Kanawha mine run.....	Columbus.....	2.15	2.15	2.00	<i>2.00@ 2.25</i>	Kansas screenings.....	Kansas City.....	3.25	3.25	3.25	3.25
Kanawha screenings.....	Columbus.....	1.15	1.20	1.35	<i>1.35@ 1.60</i>	* Gross tons, f. o. b. vessel, Hampton Roads.					
Hocking lump.....	Columbus.....	3.15	3.15	3.15	<i>3.00@ 3.25</i>	† Advance over previous week shown in heavy type, declines in italics.					
Hocking mine run.....	Columbus.....	2.15	2.15	2.15	<i>2.00@ 2.25</i>						
Hocking screenings.....	Columbus.....	1.10	1.30	1.30	<i>1.40@ 1.60</i>						
Pitts. No. 8 lump.....	Cleveland.....	3.25	3.25	3.25	<i>3.00@ 3.50</i>						

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	July 26, 1921		Aug. 2, 1921		Aug. 9, 1921†	
			Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.61	\$8.00@8.25	\$7.40@7.75	\$8.00@8.15	\$7.50@7.75	\$7.50@7.75	\$7.50@7.75
Broken.....	Philadelphia.....	2.66	8.00@8.20	7.55@7.85	8.00@8.20	7.65@7.85	7.65@7.85	7.65@7.85
*Broken.....	Chicago.....	5.62	12.40	12.45	12.40	12.45	12.40	12.45
Egg.....	New York.....	2.61	7.55@7.85	7.40@7.75	7.55@7.85	7.50@7.75	7.40@7.75	7.50@7.75
Egg.....	Philadelphia.....	2.66	8.00@8.20	7.55@7.85	8.00@8.20	7.65@7.85	7.60@8.20	7.65@7.85
*Egg.....	Chicago.....	5.62	12.40	12.45	12.40	12.45	12.40	12.45
Stove.....	New York.....	2.61	8.00@8.25	7.70@8.10	7.70@8.00	7.80@8.10	7.80@8.00	7.80@8.10
Stove.....	Philadelphia.....	2.66	8.40@8.50	7.90@8.25	8.25@8.35	7.95@8.25	8.00@8.35	7.95@8.25
*Stove.....	Chicago.....	5.62	12.70	12.70	12.70	12.70	12.70	12.70
Chestnut.....	New York.....	2.61	7.50@7.75	7.70@8.10	7.50@7.75	7.80@8.10	7.75@7.75	7.80@8.10
Chestnut.....	Philadelphia.....	2.66	8.25@8.60	7.80@8.25	8.00@8.40	7.95@8.25	7.75@8.25	7.95@8.25
*Chestnut.....	Chicago.....	5.62	12.70	12.70	12.70	12.70	12.70	12.70
Pea.....	New York.....	2.47	4.50@5.00	5.95@6.45	4.50@5.50	6.05@6.45	4.50@5.25	6.05@6.45
Pea.....	Philadelphia.....	2.38	4.50@6.00	6.00@6.20	4.50@6.00	6.10@6.20	4.50@5.75	6.10@6.20
*Pea.....	Chicago.....	5.62	11.10	11.20	11.10	11.20	11.10	11.20
Buckwheat No. 1.....	New York.....	2.47	2.50@3.25	3.50	2.50@3.25	3.50	2.50@3.00	3.50
Buckwheat No. 1.....	Philadelphia.....	2.38	2.50@3.00	3.50	2.50@3.00	3.50	2.50@3.00	3.50
Rice.....	New York.....	2.47	1.60@2.00	2.50	1.75@2.25	2.50	1.50@2.00	2.50
Rice.....	Philadelphia.....	2.38	1.75@2.00	2.50	1.75@2.00	2.50	1.75@2.00	2.50
Barley.....	New York.....	2.47	0.60@1.25	1.50	0.75@1.25	1.50	0.75@1.25	1.50
Barley.....	Philadelphia.....	2.38	0.75@1.25	1.50	0.75@1.25	1.50	0.75@1.25	1.50
Birdseye.....	New York.....	2.47		2.50		2.50		2.50

* Prices and freight rates net tons; quotations f.o.b. cars, Chicago.

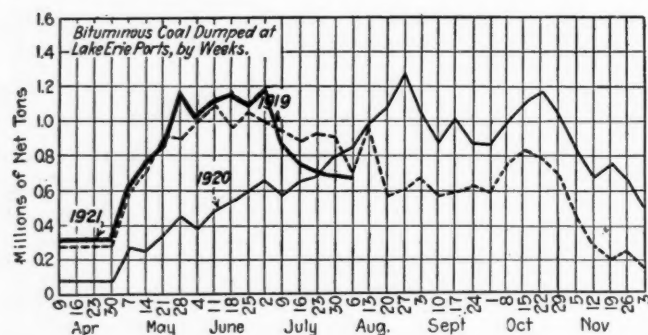
† Advances over previous week shown in heavy type, declines in italics.



In the Lake trade July shipments will show a big decrease compared with June. It is said shippers are having trouble taking care of their contract tonnage and few wild carriers are getting cargoes. Some of the lower docks have laid off night crews and no coal is being dumped on Sunday. Reports from the upper docks indicate that coal is going forward more freely, which is expected to have a beneficial effect at the lower ports. The railroads are averaging around 13,000 cars on hand at lower ports awaiting dumping, as compared with 22,000 cars several weeks ago. Upbound Soo passages of coal in July amounted to 2,915,184 net tons, of which 2,469,430 were bituminous and 445,754 anthracite.

July shipments to the interior from the Head-of-the-Lakes docks were the heaviest of any month this year and indicate a growing demand. The Inland movement was 13,448 cars, nearly double the May figure and 3,891 cars more than were shipped in June.

Lake dumpings for the week ended Aug. 7 were 698,781 net tons, divided; 673,310 tons cargo and 24,471 vessel fuel. Dumpings for the week preceding totaled 745,173 tons. Lake tonnage for the season to date now stands at 14,117,600, nearly twice that of the same period in 1920—7,646,775 tons.



Dumpings for foreign account at Hampton Roads during the week ended July 30 were 108,068 net tons cargo and 74,189 bunkers, a total of 182,257 tons, barely 40 per cent of the average in June when the demand accompanying the British strike was at its height.

During the week ended Aug. 4, the Hampton Roads piers dumped 367,841 gross tons for all accounts as against 340,504 tons during the week preceding. In view of the lighter export movement, it is apparent that New England is now the target of the water coal shippers. Canvassing

for business in that section is strong and Pocahontas and New River agencies, aided by the low marine freights now prevailing, are extending their territory further into the New England all-rail markets for the Pennsylvania coals.

The sudden release of so much tonnage ordinarily destined overseas has caused a lowering of smokeless prices. In the Western markets Pocahontas mine run was obtainable last week as low as \$2.50 per ton f.o.b. mines. This low selling price is causing many contract consumers to demand a revision of their agreements made earlier in the year, in some cases the request is for a reduction from the contract price of \$3.50 to a new figure of \$2.75.

ANTHRACITE

Production took a slump in the last week of July. The total output was 1,750,000 net tons, a decrease of 87,000 tons when compared with the week of July 23. Much coal is going in storage at the mine and it is becoming increasingly difficult to maintain the steady production of the last month.

Uncertainty prevails regarding the outcome on anthracite production of the application of the Kohler-Fowler mine cave bills. These acts of the Pennsylvania State Legislature, it will be recalled, become effective Aug. 27, and provide that operators of anthracite mines either pay a tax to the state of 2 per cent on value of output or stand the consequences in the shape of a \$5,000 fine and a year in jail if a mine subsidence should cause property damage or loss of life. It is understood that some producers have adopted a determined attitude and expect to close their collieries on Aug. 26, rather than meet the terms of the law. A bad situation may develop should it not be possible to find some compromise solution to this time-worn and perplexing problem of the hard coal men and the people in the northern anthracite region.

COKE

Production of beehive coke appears to have settled down to a weekly rate of about 40,000 tons. The total output during the last week in July was 45,000 net tons, according to the Geological Survey.

There are some indications of renewed activity, but so far the demand has been satisfied with offerings of byproduct coke. Connellsville quotations are unchanged.

Estimates of Production

FROM THE WEEKLY REPORT OF THE GEOLOGICAL SURVEY
(NET TONS)

BITUMINOUS COAL

Total Bituminous, Including Coal Coked

	1921	1920
	Calendar Year to Date	Calendar Year to Date a
Week		
July 16b	7,401,000	10,880,000
Daily average	1,233,000	1,813,000
July 23b	7,383,000	10,470,000
Daily average	1,231,000	1,745,000
July 30c	7,361,000	9,371,000
Daily average	1,227,000	1,562,000

(a) Less 2 days' production during New Year's week to equalize number of days covered for the last two years. (b) Revised from last report. (c) Subject to revision.

ANTHRACITE

	1921	1920
	Calendar Year to Date	Calendar Year to Date a
Week		
July 16	1,876,000	1,840,000
July 23	1,837,000	1,819,000
July 30	1,750,000	1,912,000

(a) Less 2 days' production during New Year's week to equalize number of days covered for the last two years.

BEEHIVE COKE

Week Ended	1921	1920
	to Date	to Date c
July 30		
1921 a	45,000	395,000
1921 b	41,000	3,562,000
1920		12,411,000

(a) Subject to revision. (b) Revised from last report. (c) Less two days' production during New Year's week to equalize number of days covered for the last two years.

Foreign Market And Export News

British Prices Decline as Output Increases

Pre-Strike Production Rate Finds Dull Market—Buyers Wait
Lower Prices—France Urges Increased Reparations Tonnage

Once again after years of governmental control, British coal is subject to the old laws of supply and demand. Slowly even yet, the factors that set the price level are feeling their way to a new understanding not controlled by the hand of officialdom and many are the shifts that are taking place. For the first few weeks every tendency was for prices to mount, as, coming off a starvation diet, buyers flocked into a market bare of supplies. Consumers were displeased thinking that as the miners had been forced to accept a lower wage and since the government was subsidizing the operators, the price of coal should go down. Instead, the demand exceeding the initial limited supply, quotations mounted through the first month of post-strike production, but in the last ten days a reaction has set in that has pulled prices for some coals again downward and is making the market hesitate on the others.

Best Admiralty large coal was quoted f.o.b. Cardiff on Aug. 1, at 45s.@46s., but six days later the price as cabled to *Coal Age*, was 40s.@42s. 6d. Likewise best small steams declined in the week just past from 25s.@27s. 6d. to 20s.@22s. 6d. Newcastle-on-Tyne quotations on Aug. 6, were for best steams, 37s. 6d.@40s., compared with 42s. 6d. the week previous and best gas was quoted at 37s. 6d., a drop from 38s. 9d. Best bunkers were 35s.@37s. 6d., unchanged from the week before.

As production increased, it having been 4,332,000 gross tons in the week ended July 23, and a substantial gain over the preceding weeks, supply overtook what was really a weak demand and this accounts for the decline in prices. In the last half of July, considerable American coal started on its way before the strike settlement, ar-

rived, and its disposal has been a problem for the government. It appears that some of it has been sold in competition with Cardiff coal at Cardiff, but at considerable loss to the government, the cost having averaged around 65s. because of vessel demurrage, and the price of coal at which it was offered being around 40s.

London reports considerable inquiry for export from old customers, but that the prices are as yet too high to induce purchase.

French Coal Buyers Playing Market for Lower Prices

(Special Correspondence)

Owing to the 14th of July, which this year entailed a four days' holiday in all offices, and the coming summer holidays, business and trading are at a standstill. French mines now seem to be in a hole again for a market for certain qualities of low-grade coal which the English readily book along with good grades, but which the French consumer, used to carefully screened and cleaned coals when supplied by the French mines, refuses to accept.

House coal dealers are pushing their sales for next winter storage. Many of them want to get through with their contracts to hurry off to the seaside, the abnormal heat prevailing being anything but conducive to work.

There is a great effort on the part of the English coal exporters to book business at the present prices which, however, are not considered very attractive by the French buyers. In other sections there is nothing to report, except that every effort is made to get Germany to increase her deliveries up to the mark of her obligations.

Prices of various grades of domestic

coals mined in France have a weak tendency, and the same situation is developing in industrial coals. The war (and especially since the armistice) has taught French importers how to put foreign suppliers in competition and they are now also holding foreign prices in the face of French operators to get the latter to come to more reasonable terms.

Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS		July 30	Aug. 6
Pool 9, New York...	\$5.90@	\$6.15	\$5.90@ \$6.10
Pool 10, New York...	5.50@	5.70	5.40@ 5.75
Pool 71, New York...	5.90@	6.00	5.90@ 6.00
Pool 1, Hampton Roads...	5.75@	6.00	5.50@ 6.00
Pools 5-6-7, Hampton Roads...	4.75@	5.25	4.75@ 5.25
BUNKERS		July 30	Aug. 6
Pool 9, New York...	\$6.25@	\$6.50	\$6.20@ \$6.45
Pool 10, New York...	5.75@	6.10	5.70@ 6.10
Belgian, Antwerp...	1.35 fr.		
Welsh, Gibraltar...			60 s. f.o.b.
Welsh, Port Said...			80 s. f.o.b.
Welsh, Singapore...			102 s. 6d. f.o.b.
Welsh, Rio Janeiro...			90 s. f.o.b.
Welsh, Algiers...			60 s. f.o.b.
Welsh, Malta...			75 s. f.o.b.
Welsh, Li-bon...			85 s. f.o.b.
Welsh, La Plata...			80 s. f.o.b.
Welsh, Madeira...			65s. f.a.s.
Welsh, Teneriffe...			65s. f.a.s.
Welsh, Genoa...			69 s. f.i.b.
Durham, Newcastle			35s.@ 37s. 6d. f.o.b.

C. I. F. Prices, American Coal

(In Gross Tons)

	July 30		Aug. 6	
	Low Vol.	High Vol.	Low Vol.	High Vol.
River Plate...	\$10.15	\$9.60	\$9.95	\$9.05
French Atlantic...	11.15	10.40	10.95	9.15
United Kingdom...			10.80	10.00
West Italy...	11.65	11.00	11.40	10.50
Scandinavia...	11.50	10.85	11.00	10.50
Rotterdam...				
Port Said...			12.00	11.25

Lamberts Point Lead in July Dumpings At Hampton Roads

July dumpings were reduced to a proximity to the average months of the year's duller periods. A total of 1,638,318 tons were dumped at the piers, in contrast to the 2,227,000 tons which went over these prices in June.

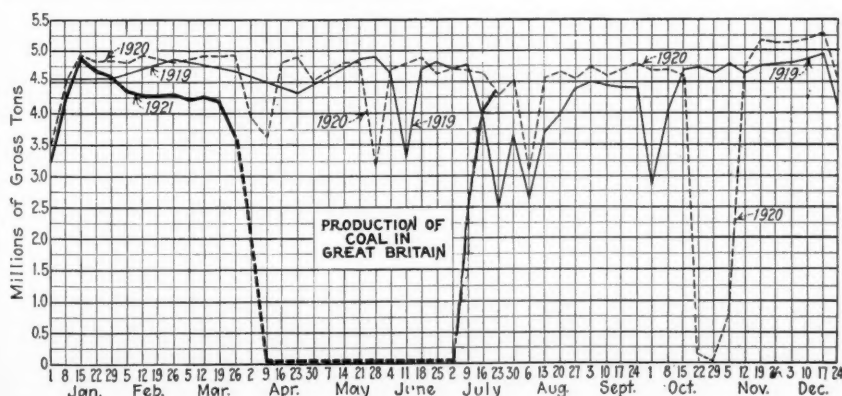
The N. & W. piers at Lamberts Point lead the July dumpings with a total of 731,708 tons; the Virginian piers at Sewalls Point were lowest with 334,928 tons; and the C. & O. piers at Newport News dumped 561,682 tons.

PIER SITUATION

	Week Ended	
	July 28	Aug. 4
N. & W. Piers, Lamberts Point:		
Cars on hand	3,067	2,633
Tons on hand	151,387	124,849
Tons dumped	149,907	212,282
Tonnage waiting	28,175	7,400
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	2,343	2,052
Tons on hand	131,850	102,600
Tons dumped	101,184	83,811
Tonnage waiting	28,501	15,407
C. & O. Piers, Newport News:		
Cars on hand	2,633	2,309
Tons on hand	131,650	115,450
Tons dumped	89,413	71,748
Tonnage waiting	2,790	5,485

Mine shipments have gradually decreased, as witnessed by the fact that all three piers report fewer cars on hand. The accumulations have gone down, due, to some extent, to the willingness on the part of shippers to sacrifice profits to avoid demurrage.

The market appears exceedingly dull, but shippers are optimistic and believe the lull in trade is only temporary.



After Early Summer Slump German Output Recovers— Coal Tax to Aid Reparations Program

An official statement issued by the German government and cabled to *Coal Age* on Aug. 3, states that production of coal in Upper Silesia in the first half of July was 891,000 metric tons, which represents a gain over the average semi-monthly rate of 830,000 tons in the first five months of this year. Political troubles have interfered with mining activity in this field for several months, but the lack of output has not greatly inconvenienced any except in parts of South Germany.

A cable of the same date gives the production of coal in the Ruhr in the week ended July 23, as 1,779,000 metric tons, approximately equal to the rate in June, but some 200,000 tons in excess of the weekly rate early in July.

According to H. O. Herzog, correspondent of *Coal Age* in Berlin, the absence of shipments from Upper Silesia and the decrease in production in the Ruhr early in the summer, due to the abolishment of extra shifts, no shortage actually exists. The Ruhr output in June was 7,753,000 metric tons. In the week ended July 9, production dropped to 1,574,000 tons, about 200,000 tons from the weekly rate in June. The only part of the country where a certain stringency of supply is observed is South Germany, due to the river transportation having been handicapped by low water, and to the fact that South Germany is to a certain extent supplied from Upper Silesia.

PRODUCTION DECLINED IN MAY

Production of pit coal in May and in the first five months of 1921 is shown in metric tons by the following figures:

	May	January to May
Westphalia.....	6,954,607	37,542,953
Upper Silesia.....		8,308,529
Lower Silesia.....	253,638	1,831,981
Rhineland.....	436,088	2,387,277
Clausthal.....	34,108	195,141
Halle.....	2,675	17,267
Total for Prussia.....	7,681,116	50,283,148
Bavaria.....	4,271	32,552
Saxony.....	353,087	1,874,709
Smaller fields.....	12,293	68,787
Total for Germany.....	8,050,767	52,259,196

Daily production in the Ruhr district was less than in the preceding months by about 4,000 tons, and remains behind that of February by 37,000 tons. In spite of the promises made by the miners' association to balance the abolishment of extra shifts by higher individual production, no such increase has taken place.

Large quantities of coal could be exported, as the German industry is still able to undercut foreign competition, but as long as the coal tribute to Entente countries is not definitely settled, exports will have to be treated with great reserve. Provision is, however, already made for taking up extra shifts at a given time, which can be seen from the fact that a law regulating working time to seven hours—a fundamental requirement of the miners' unions for again discussing extra shifts—has been put

into the legal machinery, in spite of the resistance of the mine owners. Another step which is in contemplation is the intended increase of the coal tax. This is now 20 per cent of the sales price, and it will probably be raised to 25 or 30 per cent.

The government declares that an increase of the coal tax is absolutely necessary for raising the reparations payments. Another reason for this is the coal tribute to the Entente countries, for which Germany receives credit only at the rate of domestic prices. By raising to the level of prices in Belgium and France, it is hoped that their requirements of German coal would materially diminish. Many stories are circulated of the damages wrought to German interests by the cheap reparations coal. The fact is not lost sight of that by removing the difference between German and foreign coal prices, the desire for the latter would become stronger.

Dutch Miners Strike; May Develop Emergency Demand for American Coal

A dispatch to *Coal Age* from the Hague under date of Aug. 3, states that the coal miners in Holland are on strike against a reduction in wages demanded by the Netherlands government. It is reported that the pumpers are still at work, stokers being partially supplied by students. The Netherlands Union Railway and Tramway Workers have declared their sympathy with and

offered their financial support to the striking miners.

Production of coal in the Netherlands is about 3,500,000 metric tons a year. Imports available for domestic consumption, that is exclusive of re-exports and of foreign bunkers, range normally from 2,000,000 to 2,400,000 metric tons a year. Imports are mainly from Germany and Belgium, although in 1920 more than 70,000 tons a month of American coal was imported into Holland.

Quotations to *Coal Age* by cable, from Rotterdam under date of Aug. 5, are that the market on American gas coal is \$8@8.50 per gross ton, and British steam coal 42s. per gross ton.

Hampton Roads Clearances Week Ended Aug. 4

	Tons
For Atlantic Islands	
Am. Schr. Virginia Pendleton, for St. Thomas	2,209
For Argentine	
Du. S.S. Wolsum.....	5,610
For Brazil	
Am. Schr. Alice May Davenport, for Buenos Aires.....	1,769
Jap. S.S. Yaye Maru, for Rio de Janeiro.....	6,583
For Cuba	
Dan. S.S. Nordamerika, for Havana.....	4,257
Nor. S.S. Joseph Cuneo, for Antilla.....	788
Br. S.S. Norman Monarch, for Havana.....	6,790
Am. S.S. West Catanae, for San Diego.....	7,467
Am. S.S. Moosehausie, for Havana.....	4,634
For Greece	
Br. S.S. Aldgate, for Piraeus.....	5,229
For Italy	
Ital. S.S. Atlantico, for Genoa.....	4,621
Ital. S.S. Iris, for Genoa.....	2,353
Ital. S.S. Labicum, for Spezia.....	5,974
Ital. S.S. Lodovica, for Trieste.....	3,313
Nor. S.S. Rovair, for Santiago.....	991
Am.S.S. Manta, for San Juan.....	2,390

Reports From the Market Centers

New England

BOSTON

Market Very Quiet—"Distress" Coal a Feature—Rail Movement Shows Small Increase—Hampton Roads Agencies Active—Anthracite Demand Light.

Bituminous—There are practically no buying developments in any direction, the market continuing as heretofore in a state of extreme dullness. There are almost no relieving factors; industrial consumption remains light, with no prospect of early change on production that require heavy machinery.

A few special lines, like silk goods and gingham, are in demand, but the manufacturing situation as a whole in this territory is extremely quiet. Certain of the mills in important centers like Lowell and Lawrence, Mass., have discharged 50 per cent of their help

and have advised them to look for employment in other trades. There are few signs here of any industrial revival.

"Market cargoes" are still coming forward, particularly from Hampton Roads. Frequent efforts to force these shipments upon unreceptive buyers have resulted in new low levels for Pocahontas and New River on board cars for inland delivery. A price of \$7.15 per gross ton has been quoted on "distress" coal on cars Boston. Such coal is absorbed only with great difficulty, for those consumers who would normally be disposed to buy on any such range of price find themselves well stocked with earlier purchases that seemed "right" at the time.

Even shippers of the most favorably known grades of Pennsylvania coals are being hard put to it to move tonnage on current prices. Some of the largest steam-using centers here are near enough to Tidewater to be affected by low offerings on the smokeless

grades. Business which certain Pennsylvania shippers have been enjoying since the first year of the war has, much of it, shifted to the Pocahontas and New River agencies; although the aggregate is small, chiefly because so little fuel is being used.

All the Hampton Roads shippers are closely canvassing the territory they can reach. Coal on cars at the loading piers now runs up to high tonnages, and none but strenuous measures are employed to move it. Off-shore business at present is by no means broad enough to include more than a few interests, and in consequence the hunt for a market in New England is all the more keen. The low range of marine freights is a very helpful factor to these shippers, but at that the net return to the mines must be even less than on the fair grades in central Pennsylvania.

Anthracite—The old-line companies appear to have orders for egg and stove that will see them through August, and here and there are retailers who are interested to the extent of patching out their quotas of those sizes in order to be ready for fall business. Meanwhile, most of the so-called "independents" are making most valiant attempts to dispose of anything at all.

Tidewater—East

NEW YORK

Anthracite Demand Quiet—Independent Operations Suspend in Part—Buckwheats Stronger—Bituminous Turning Point May Be Here—Improvement Looked For.

Anthracite—Numerous appeals being made from many sources that consumers lay in their winter coal have apparently fallen flat, with the result that the demand has slumped and suspensions in the collieries are becoming more frequent. In addition to these enforced shut-downs, the mine workers have become dissatisfied and there are numerous labor disturbances. Unless the public wakes up soon, further curtailment may be necessary.

Some surprise was occasioned this week when one of the large producing companies announced an increase of 10c. per ton in its prices for broken coal and 20c. per ton to the July price for stove, but omitted any increase in the prices for egg, chestnut and pea. Some of the independents announced increases over their July schedules, but many of them are taking orders under the company price lists, while others are curtailing production because of the small demand.

The suspension of mining had a tendency to strengthen the market for the buckwheats. There is not so much of these coals here, but quotations remain low. Alongside quotations for buckwheat were heard as low as \$5.50; for rice, \$4.90, and for barley, about \$1 lower. The range of prices for company and independent coals is shown in the Weekly Review.

Bituminous—The optimistic feeling prevalent in many lines of other business has invaded the coal offices, but so far has not resulted in a rush of orders. However, there have been many inquiries regarding September deliveries. Taken altogether, the indications are that the turning point is about here and that business will soon pick up.

Purchasing agents who have refused or neglected all through the year to make contracts and have been buying their necessary requirements in the open market, at prices much below what they would have paid under contract, are beginning to realize that if they want to have full bins before snow flies they must get busy. They are noticing that the grain movement is under way and that many cars have already been taken out of the coal-carrying business. They also realize that unless demand increases shortly, there is danger of production being further decreased by the closing down of additional mines.

The movement of coal to this market is increasing, but not in quantities sufficient to cause any congestion. Demand for the cheaper grades is slow, most buyers asking for either Pool 9 or 10 coals. Individual coals are in demand, some buyers, it is reported, being willing to pay small increases over quotations for pool coals if assured of the grades they want.

An encouraging sign in market conditions is the improvement in the demand for slack. A few weeks ago quotations ranged around \$1.50, while present figures with some dealers are \$1.75@\$.2.

Quotations for Pool 9, f.o.b. piers ranged \$5.90@\$.6.10; Pool 10, \$5.40@\$.5.75 and Pool 71, \$5.90@\$.6.

PHILADELPHIA

Dealers Buy Little Anthracite—Stove Only Wanted Size—Dealers Strong Financially—Steam Sizes Weak—Bituminous Prices Trifle Lower—Light Spot Deliveries—More Inquiries.

Anthracite—Early in the week there was just the slightest semblance of better business in the retail trade, due to two cold days, which impressed some people with the idea that it would not be long before they would need coal again. With the recurrence of warmer weather, this flash in the pan faded away and retailers continue in their attitude of waiting for something to turn up.

Stove continues to be the only wanted size, but not because there is not sufficient on hand to make deliveries. It is simply a case of less of this coal being on hand than any other size, and the general purpose seems to be to get the bins filled with this size. All companies are keeping to prices as announced on Aug. 1 and premiums are unheard of. Some shippers are so badly in need of pea orders that they are shading this size much below their circulars, but are moving very little at that.

Bituminous—The trade remains quiet, but with an occasional report of somewhat better business. Consumers are being strongly urged from all directions

to take in coal, and the variety of prices and grades brought to their notice causes them to take much time in placing business. Often they are inclined to try out a small tonnage of a new grade offered at a low price, and in this way there is much switching of custom. Regardless of grade, it is generally remarked that coal is coming to hand in better preparation than for years, and is really top-notch in this respect.

The principal buying at this time is by those consumers who can lay in a winter's supply at one time, and there have been a few orders of this kind lately, running from 100 to 1,000 tons. These small consumers seem satisfied that freight reductions are still far off and that coal at present prices is a real bargain.

With wage adjustments among non-union men in the districts around Johnstown, Windber and Somerset estimated to figure out 50c.@75c. a ton less than Cambria and Clearfield scales, shippers from the latter fields are placed at a disadvantage, which has resulted in a further lowering of prices, with the possible exception of Pool 1, which is inclined to be firm, and occasionally a bit higher than recently.

The outlook at Tide is not particularly good. There is only a fair bunker trade, with prices unchanged, and overseas shipments are really unimportant compared with a year ago.

BUFFALO

No Improvement Felt in Coal Circles—Prices Unchanged—Hard Coal Dull—Lake Shipping Active.

Bituminous—Statements are becoming rather common in the daily papers to the effect that business conditions are improving. The Buffalo papers do not care to be behind in the good work and so are apparently looking for business men, especially manufacturers, who are willing to talk in the same way. They are finding them.

We too often get bad business conditions because we predict them and do not try hard enough to avoid them, but at the same time a fictitious tone to affairs can do very little good. Business must not be crowded into an activity that will not hold. When the times are ready for a revival, industries will be the first to indicate it and will speak with authority.

Prices are much as before, although slack has firmed up at the expense of the sizes: Quotations: \$3 for Youghiogheny gas lump, \$2.75 for Pittsburgh and No. 8 lump, \$2.50 for Allegheny Valley mine run and \$2 for slack, to which add \$2.36 to Allegheny Valley and \$2.51 to other coals to cover freight.

Anthracite—Some distributors think there is a slight stir in the demand and hope it will continue, for it will make the late fall and winter rush less of a riot. What is not bought now will have to be bought later. Reports from Canada and the Upper Lakes agree that the coal is still piling up in dealers' bins and on the docks.

Retail prices went up 10c. on Aug. 1, making coal to the curb \$12.80 for grate and egg, \$13.05 for stove and chestnut, \$10.95 for pea and \$8.75 (not advanced) for buckwheat. Stove is very scarce and seldom sold in quantity unless the buyer will take a certain proportion of other sizes.

Independent mines are running at a slow rate. Asking prices, f.o.b. mines, run from \$8.15 to \$7.45, but circulars are of a somewhat urgent nature and often close by asking for an offer. It is hard for jobbers to keep up a steady trade.

Lakes—Loading is beyond all precedent. The total for last week was 182,800 tons, a record breaker, of which 116,100 tons cleared for Duluth and Superior, 27,500 for Milwaukee, 24,200 for Fort William, 7,800 for Chicago, and 7,200 for Waukegan.

Freight rates remain at 60c. @ 65c. to Chicago, 65c. to Waukegan, 60c. to Milwaukee, and 50c. to Duluth and Fort William.

Coke—There is a rumor that furnace owners are looking for a stir in the iron trade soon and that some of them claim to feel it already. The moment that comes the trade will jump. Meanwhile prices remain at \$4 @ \$4.25 for 72-hr. foundry, \$3 @ \$3.25 for 48-hr. furnace and \$2.75 for stock, with domestic sizes \$5 @ \$5.25.

BALTIMORE

Better Line of Inquiry on Future Deliveries—Spot Market Extremely Dull and Prices Soft—Export Movement on More Natural Basis—Hard Coal Men in Trouble.

Bituminous—With the exception of a better line of inquiry that is developing in some offices as an apparent result of the plans of business interests generally of providing for possible resumption in the early fall, the coal market remains extremely flat and uninteresting as to demand, with prices abnormally low.

Best grade steam and gas coals are on the market at a net mine price from \$2 @ \$2.40, and were there any material number of bargain hunters for coal supplies for immediate and future delivery, they would have their hearts gladdened by the ease with which they can at this time pick up the best of fuels at prices below actual production costs, or so near to such costs as to wipe out even a fair margin of profit to the mine interest.

Export movement from Baltimore for the month of July, totaled 289,185 tons cargo and 30,637 tons bunker. For the first two days of August, so far reported, there was loaded 10,674 tons cargo, with no bunkers taken.

Anthracite—There is a complete cessation of hard coal buying in this city, apparently largely as a result of the campaign of misrepresentation conducted in certain newspapers and political circles against the hard-coal merchants of Baltimore, which resulted last week in the indictment of the Baltimore dealers on a charge of conspiring to fix prices.

Both before and after the indictment

the coal men have urged the public to buy coal at once, pointing out that a withholding of all orders at this time in the belief that lower prices will result therefrom, is a distinct fallacy. The trade points out that as fall approaches, prices will of necessity be higher and there will also be great difficulty in supplying customers who will all want coal at one time.

Northwest

MILWAUKEE

Market Improved by Increasing Demand—Full Yards Must Be Relieved—Anthracite Quotations Advanced.

Dealers report a betterment in local deliveries, and there is an increased movement to the interior. However, the number of consumers supplied is still from 30 to 40 per cent below normal. It seems difficult to dissipate the idea that prices are due for a drop. Yards are almost full to overflowing.

The August price of anthracite has not been officially made. However, dealers are quoting egg at \$15.85, stove and chestnut at \$16.10, pea \$14.35, and buckwheat \$12.10, an advance of 10c. per ton on July prices. It transpires that while the usual advance of 10c. on July 1 was withheld for some reason by those controlling the anthracite supply, most of the Milwaukee dealers added the 10c. There is no change in the price list of bituminous coal.

Receipts by Lake during July were 459,387 tons, of which 124,934 are anthracite and 334,453 soft coal. The season's receipts are 1,994,383 tons, against 985,055 tons during the same period last year. The increase is divided as follows: Anthracite 154,854 tons, bituminous 854,474 tons.

DULUTH

Dock Storage Space Is Scarce—Vessel Unloading Delayed—Interior Movement Picks Up—Anthracite Receipts Increase.

Slight increases in shipments from Duluth docks, together with storage space for some 200,000 tons of coal which still remains to be filled, are holding the docks at Duluth-Superior harbor open so that some coal may still be shipped in. The condition is growing more serious every day, however. Last week several loaded ships were held in the harbor until the particular docks to which they were consigned were emptied sufficiently by shipments to permit unloading.

Receipts for July exceeded by 1,026,300 tons shipments during July last year. Last month 1,634,100 tons of bituminous and 329,300 tons of anthracite came to the docks, against 726,400 of bituminous and 211,700 of anthracite the same month a year ago. Receipts this year so far are 785,900 tons of hard and 5,422,500 of soft coal, or a total of 6,208,400 tons.

Nearly half of the total supply of anthracite received at the local docks this year came in during July. From

this dealers are hoping that there will be an increase in anthracite shipments and that no shortage of hard coal will occur this year.

Dealers are holding more firmly to anthracite prices and are refusing to make any concessions to obtain business. Youghiogheny and Hocking gas coals are offered at \$7, with \$7.25 quoted for steam coal. Splint is \$7.25 and run of pile in all classes is quoted at 75c. under the quotations for lump. Screenings are \$3.85 @ \$4, with no chance of lowering.

With the first of the month the regular 10c. increase in anthracite prices went into effect. Egg stands at \$12.65 at the dock, stove and nut at \$12.90, buckwheat \$8.50 and pea \$10.90. Dealers in Duluth operate on a \$2.50 margin.

Shipments of coal from the docks of Duluth-Superior harbor for the month of July were 13,448 cars, which is 3,891 cars more than in June. Last month scored the heaviest shipments of the year. In July, 1920, 15,052 cars left the coal docks. The mark for this May was 7,883 cars, showing that a healthy increase has taken place in the last two months.

Inland West

DETROIT

Steam Buying Still Confined to Bargain Lots—Domestic Market Sluggish—Anthracite Trading Unimproved.

Bituminous—Buyers are not yet manifesting any interest in steam or domestic sizes of bituminous in the Detroit market, according to wholesalers and jobbers, who say that sales of steam coal are limited very largely to bargain offerings.

Some of the steam plants are reported creating small reserves by purchases of stock offered from time to time at distress prices. Otherwise, the amount of business transacted is discouragingly small.

Emphasis is placed on the fact that those who do not buy now are running a risk of being forced into the market when far less favorable conditions will be found in transportation matters and with prices at a higher level than at present.

While there is a tendency to ascribe the lack of domestic business to the unemployment of many household consumers, the jobbers place considerable stress on the fact that if those who are in a position to do so would make their purchases now, a considerable quantity of coal would be sold and the retail dealers would be enabled to renew supplies in their yards to safeguard the requirements of those who, though unable to buy coal now, will be forced to obtain a supply later in the year.

Smokeless lump and egg is quoted at the mines at \$5.25, mine run at \$3 and slack \$1.50 @ \$2. West Virginia 4-in. lump is \$3.25, 2-in. lump \$2.90 @ \$3, egg \$2.75, mine run \$2.15, nut and slack \$1.50. Ohio lump is \$3.25, 1½-in. lump

\$3, egg \$2.75, mine run \$2.50, nut and slack \$1.50.

Anthracite—Sales of household sizes of anthracite are very light, unwillingness to buy at present prices being given as the cause.

COLUMBUS

Trade Falling—Gradual Increase in Domestic Demand—Screenings Showing Marked Strength—Production Still at Low Point.

Domestic trade is now attracting the bulk of attention. Retailers are showing a tendency to buy more liberally as they want to be in a position to take care of current business. Householders are coming into the market more and more, although some are still waiting for reduced freight rates which they believe will be reflected in lower prices.

Retail stocks in Central Ohio are rather spotty. Some dealers have large stocks, while others have been staying pretty close to the shore. Consequently, these last dealers are the best customers at this time, when householders are coming into the market. Retail prices are steady at former levels. Hocking lump retails around \$6.50 and re-screened varieties \$6.75. Splints are quoted \$7.50, while Pocahontas is \$9.50-@ \$10. Anthracite is moving fairly well around \$14@ \$15.

The steam business is practically dead. Little tonnage, outside of coal for public utilities, is moving. Railroads are only taking a small tonnage, while schools and public institutions are now fairly well supplied. The demand for screenings is holding up and prices are advancing, due largely to reduced production of lump. With the Lake trade dwindling, the output of screenings has been further curtailed, although increased domestic production will soon right the situation.

The Hocking Valley docks at Toledo loaded 181,122 tons during the week ended July 30, as compared with 122,328 tons the previous week. The total loaded for the season is 2,409,292 tons. During the same week the T. & O. C. docks loaded 37,857 tons, as compared with 66,629 tons the previous week, making 631,880 tons for the season.

CINCINNATI

Temporary Market Flurry—No General Improvement—Retail Prices Unchanged.

First-of-the-month orders somewhat bolstered up a lifeless market, but by mid-week this flurry had passed and things were back in the same old rut. Lake business has sloughed off, buying being practically nil.

Kentucky nut and slack is being held \$1.20@ \$1.40 with sales down to \$1. West Virginia offerings hold 25c. above this with few sales over \$1.50. Mine run is variously priced, good coal bringing up to \$2 and off-grades down to \$1.60. Kentucky lump is \$3.25@ \$3.50, and West Virginia has a gamut of prices running \$2.75@ \$3.50.

Smokeless business picked up a little,

with egg and lump \$5@ \$5.50. Nut is quoted \$4@ \$4.25 and mine run \$2.50@ \$3.50. Slack is practically out of the market, the quotations being mostly for poorer grades at \$1.85@ \$2.

Retail prices have shown no signs of changing. Retailers who are heavy handlers of smokeless say they cannot see any prospect of a reduction until lump reaches the \$4 basis. Top grade Pocahontas is held at \$10.25 down to \$9.75, mine run \$7.50@ \$7.75 and screenings \$6. Bituminous lump, better grades are \$8.25@ \$8.75, average, \$7.25@ \$7.50; mine run \$6.25, and screenings \$4.45@ \$5.

CLEVELAND

Pocahontas Quotations Softening—Slack Still Strong—Demand for Industrial Coal Slightly Better—Lake Shipments Decline.

Bituminous—Explanation of the remarkable stiffening of slack coal in the last few weeks is to be found in the report of Lake shipments for July. The total movement up the Lake of cargo fuel during the month was 3,554,686 tons, compared with 4,658,309 tons in June, a reduction of more than 1,104,000 tons, or 23 per cent. This large curtailment of shipments, caused by the congestion of coal at lower ports and the tardy distribution of the fuel from upper docks into consuming channels, naturally has cut down the production of slack. For the season to Aug. 1 the Lake movement has been 13,015,062 tons, compared with 6,253,738 tons for the same period in 1920; 12,617,285 in 1919, and 11,305,995 in 1918.

Although the demand for slack, due to the scarcity, is the largest of all grades, compared with the supply, dealers report a slight increase in buying of other kinds of industrial fuel. This reflects the somewhat better plant operations in the iron and steel and some other industries. Whether or not this improvement is to expand into an unmistakable buying movement remains to be seen. One dealer says that more inquiries have been received for coal in the last few days than for the same length of time in months.

Anthracite and Pocahontas — A development of interest in the Pocahontas market has been the drop of spot mine prices by about 75c. Most retailers are preparing to revise their delivered price in accordance. An interesting angle of the situation is that all of the large yards contracted for their Pocahontas mine run at the beginning of the season at \$3.50 a ton. It is now selling at a mine price of \$2.75. The smaller dealers, who are without contracts, are able to buy this coal cheaper than the large yards and to undersell them on the retail market. As a result the large dealers have served notice upon the operators that the contracts must be revised downward. Refusal would mean that dealers could order deliveries stopped and buy in the open market.

Receipts of bituminous coal at Cleveland for the week ended July 30 amounted to 546 cars, divided; 402 industrial, 144 retail, representing an increase of sixty-two cars over the previous week. The normal requirements of Cleveland are said to be around 1,200 cars of bituminous coal per week.

ST. LOUIS

Conditions Continue Quiet—No Activity Anywhere—Car Shortage Forerunners Appear—No Price Changes.

There is nothing to break the monotony of the weary waiting days that the trade puts in, until some rift in the clouds will indicate a move in the right direction.

Steam, which moved up a notch or two since the middle of July, does not keep on. It improved a little in price, and that is all. Screenings demand has been some better, but not enough to cause any stir.

Locally, steam is easy. There is only a slight call and this is mostly for a little storage. In the country, the steam coals are in an extremely sluggish position.

Domestic shows no change. Carterville is doing the best, but this is next to nothing. A few dealers have ordered a little Mt. Olive and Standard, but it is so small that it does not count.

No smokeless is moving and anthracite receipts are light. Coke trading is at a standstill. There are no increases in prices. Country domestic is picking up some in western and northern Missouri. In the South there is nothing doing to speak of.

South

BIRMINGHAM

Market Tone Slightly Better—Supply Much in Excess of Commercial Demand—State Program to Aid Domestic Mines.

While actual results of better trade conditions are not in evidence at this time, there is a feeling among coal men that a change for the better is to be expected in the near future, though of course anything approaching a normal market is not contemplated for some time to come. There is a slight revival in some industrial lines, but not sufficient activity as yet to affect the coal market favorably.

Although the retail domestic trade is still lagging badly there is a belief expressed that as a result of the information given the public by the State Fuel Administration in a statement showing the prices of domestic lump for the month of August, f.o.b. mines, the freight rates to the principal points in the State and a reasonable margin to be charged by the retailer, consumers will conclude that lower prices are not to prevail and will begin to place orders accordingly, which will in turn enable domestic mines to speed up production.

Acting Fuel Administrator Roy R. Cox has issued an appeal to the public

to no longer delay laying in their winter coal, as prompt action only can forestall a serious shortage during the coming winter months. Lump quotations f.o.b. mines with freight rates to Birmingham ranging 87½c. to \$106½ per ton, are as follows: Big Seam \$3.25 @ \$4.20, Carbon Hill \$4.15, Black Creek \$4.42 @ \$6.00, Cahaba \$4.90 @ \$7.10, Corona \$4.95, Montevallo \$6.30 @ \$7.10.

The data compiled by the State Fuel Administration is only published for the information of the public and as a check against retail prices charged consumers by the dealers, the suggested margin for the dealers in Montgomery, Mobile and Birmingham being \$3.10 per ton and other points \$2.50 to \$2.80.

LOUISVILLE

Market on Rebound from Low Demand—Some Jobbers Guaranteeing Prices—Screenings Show Further Strength.

As the result of a hold-up in Lake shipments, overproduction of screenings has stopped, and the low price level on screenings is now around \$1.35. Lump coal cannot be touched today for less than \$3 @ \$3.50. Mine run is a little firmer, but average quotations do not show much increase.

Producers are loaded up with screenings orders for future delivery. Retailers are making numerous inquiries for prices, especially for September delivery, when the anticipated consumer stocking of prepared should at last start.

Some consumers who have played for a lower market have closed orders where prices have been guaranteed until the close of the year. Jobbers do not figure that they are taking any chances in guaranteeing present low prices, in view of the fact that winter demand is bound to be far more active for heating, if not for actual industrial consumption.

Production is larger than at this time last year, as smaller business is finding a full car supply. Industrially there is no marked improvement in any one line. However, the cement, lime, brick and clay people are busier.

West

DENVER

Production Increases—Agitation for Lower Prices—Demand Still Lags

Coal mining shows a tendency to increase despite the agitation going the rounds for a whirl at the coal leasing act of 1920. The city of Denver is just getting out "from under" one municipal coal yard experience that was hazardous and costly, but efforts are being made to have the City Council act again with probably like hazards.

Some newspapers are saying that lignite can be put in the consumer's cellar for \$3.50, as against the present price of \$6.35 @ \$8.50, and bituminous, retailing at \$11 @ \$12, could be sold for

\$6, if the city took up 2,560 acres in northern Colorado, or several sections of federal coal land in the north and south.

Meantime, mines are working part time and operators are wondering how much longer the consumer will wait before getting in his winter supply. The millennium for the consumer—as the latter has it pictured to him—is a long way off.

Tonnage of a year ago has not been maintained this summer, although the week ended July 23 showed an increase of 20,000 tons over the previous week, when 160,000 tons were mined. The output of a year ago was about 225,000 tons. Lack of orders was responsible for most of this "lost tonnage," some little trouble being experienced by inability to get the proper cars for loading when wanted.

News From the Coal Fields

Northern Appalachian

ANTHRACITE

Operations Hindered by Labor Troubles—Demand Is Weaker—Heavy Storing at Mines.

Operating conditions took a slump last week. There is a strike in the Panther Valley and 6,000 men are out. All of the mines of the Lehigh Coal & Navigation Co. are closed. The Lehigh & Wilkes-Barre Coal Co. has had some trouble at one of the collieries and it has been shut down, off and on, for some time. The Lehigh Valley has eight mines on strike out of thirteen which it owns in the northern coal district.

Some of the larger independent companies are operating only three days a week and a number of the smaller producers are closed down altogether. One of the large companies is only operating part time and nearly all producers are stocking coal at the mines. Not much change is expected during this month, and it will be Sept. 1 at the earliest before any marked resumption will take place.

CONNELLSTVILLE

Byproduct Coke Purchased Instead of Connellsville—Reduced Frick Scale—Prices Unchanged.

The first important development in the open market showing a trend toward byproduct coke in this period of close price figuring is the contract between the Sharon Steel Hoop Co. and the Youngstown Sheet & Tube Co., whereby the latter is to furnish byproduct to the former for operating the Mary furnace at Lowellville, Ohio. The furnace has just been started. Prices reported on the transaction are purely conjectural, the only thing certain is that the delivered cost is much below what could have been done with Connellsville. It is possible that coke now in stock will be used quite largely. There was a possibility that the Wickwire-Spencer Steel Co., Buffalo, would buy byproduct coke from a nearby operation but, as reported a week ago, Connellsville coke was brought at \$3 net to the consumer.

The spot furnace coke market con-

tinues very quiet. It is only very occasionally that any coke is sold for furnace use. Other sales, for miscellaneous use, are of small lots, at \$3 down to \$2.75, the lower prices being probably for coke under the blast furnace standard. Soft coke brings \$2.75 and less. Spot foundry coke continues in moderate demand with the market softer, though not quotably lower.

The Frick scale of Aug. 1 represents a reduction of a shade under 10 per cent. Per 100 bu. mining rates are \$2.38 for pick mining room and rib coal, \$2.63 for heading coal, \$2.77 for wet heading coal and for machine mining \$1.50, the rates being equivalent to 63c., 69c., 73c. and 39½c. respectively per 2,000 lbs. The rates in general average fully 10 per cent above the independent scale of July 1.

The market remains quotable as follows: Spot furnace, \$2.90 @ \$3; contract furnace, \$3; spot foundry, \$4 @ \$4.50, per net ton at ovens.

PITTSBURGH

Demand Continues Light Account Non-Union Competition—Prices Unchanged.

Demand from consumers normally tributary to the district is light, and even of that, little of it is expressed in inquiry for Pittsburgh district coal, because it is possible to buy at materially lower prices from nearby non-union districts, particularly the Connellsville region. As good gas coal can rarely be obtained thus, there is a moderate demand for Pittsburgh district gas coal.

There is not much contract business in force, but shipments are fair against such contracts as exist. Shipments in the lake trade are now quite light, having been on the wane for several weeks.

Nothing definite has turned up yet as to revision of the wage scale, though in some quarters a reopening of the subject, upon the initiative of the miners, is regarded as far from improbable. The further reductions recently made in the Connellsville region increase the divergence in mining costs between the Pittsburgh and the Connellsville regions. Independent Connellsville operators made a further wage reduction July 1, while the H. C. Frick Coke Co. (Steel Corporation) made a second reduction Aug. 1. Present rates for pick mining

room and rib coal per 100 bu. are \$2.06 on the independent scale and \$2.38 on the Frick scale, equal to 54c. and 63c. respectively per ton.

The steel industry has made a turn for the better in operations, but the gain is small and it is doubtful whether mill operations will average more than 25 per cent for the month of August, July having shown barely 20 per cent.

Prices are largely nominal, there being scarcely any transactions: Slack, \$1.60@1.75; steam mine run, \$2@2.15; 3-in. steam, \$2.25; gas mine run, \$2.20@2.35; gas lump, \$2.60@2.80.

EASTERN OHIO

Production Increases—Lake Tonnage Slumps, But Is Offset by Better Industrial Demand—Slack Shows Strength.

Despite predictions to the contrary, production continues at a good clip and the week ended July 30 was the largest since the last week in May. Output aggregated 400,468 tons, or approximately 64 per cent of capacity. Tonnage mined was 4,450 tons ahead of the previous week. Production for the year, to July 30, is approximately 9,966,000 tons, or 53.5 per cent of total rated capacity.

Conditions in the general coal trade are at least no worse than during previous weeks, and by reason of lower volume to Lake and the aggregate tonnage mined continuing at a good rate it may reasonably be concluded that demand from a new quarter is entering the market. Railroads are increasing their orders and between 30 and 35 per cent of all tonnage mined is going to the carriers. Industrial conditions indicate a slight improvement, especially in iron and steel, and the rubber industry.

Inquiries are showing better tone, although the majority of consumers seem content to supply their needs from day to day in the spot market. One outstanding feature of the week has been a constant rise in the spot prices on slack, with this grade selling freely at \$1.80. This is quite a contrast with the price of \$1 several weeks ago, when it was reported that the largest order of the season, involving 100,000 tons, was closed with a public utility at that figure.

The reason given for the stiffening in slack prices is that a smaller quantity is now being produced because of Lake shipments slowing up. This situation is assisted by a slightly improved demand on the part of industry.

UNIONTOWN

Demand Slowly Returning—Keen Competition—Furnace Coke Spotty.

Negotiations are expected to be completed in the immediate future for the largest coal order to be placed in the Connellsville region for some time. Reports say that one consumer is negotiating for the purchase of 400 cars, 200 of Pittsburgh vein and 200 of the Sewickley vein.

With the slowly returning business, jobbers and operators are beginning to

appreciate just what real competition is. A year ago there was the keenest competition for coal tonnage on the rising market. Today, dealers are literally fighting for every ton of coal they sell. The operator who has built up his business upon the basis of satisfaction to his customers is now beginning to reap his returns.

It is not unusual in certain offices to receive an order duplicating one previously executed. In some instances these "repeat" orders carry a price provision, but in others the buyer has sufficient confidence in the jobber to permit him to name his own price.

There is some talk that in the near future several large coal consumers will be in the market to place orders. It is rumored that the coal will be purchased for storage purposes at the present low prices in anticipation of needs which may arise in the near future.

Furnace coke continues exceedingly spotty, the price for what little is being moved being determined largely upon the brand. No additional contracts have been signed, but jobbers report that spot inquiries are picking up. Average quotations are \$3@3.25, with some off-grade tonnage moving below that figure. There is a luke-warm demand for foundry, with the price ranging \$4@4.50. Grades of coal range \$1.75@1.85 for steam and \$2 for by-product.

UPPER POTOMAC

Industry Marks Time—Prices Too Low for Acceptance.

The end of July found the industry marking time, with comparatively few mines in operation. Standing orders alone permitted mines to run, spot orders offering being at such low prices as to preclude their acceptance. Even the better classified coals found a negligible market. Tidewater business was virtually at a standstill.

CENTRAL PENNSYLVANIA

Production Slumps—Union Operations Seriously Hindered by Non-Union Wage Cuts—Early Action Necessary.

July production totaled 51,000 cars, a loss of 5,964 cars, or 295,000 tons compared with June, when 56,964 cars were shipped from the district. The outlook for August, in the union mines, is less favorable, for the reason that the effect of the wage cut in Somerset County and in the Westmoreland-Connellsville field is beginning to be felt. Practically all the Somerset mines are now back to the 1917 wage scale and will be able to produce coal at a labor cost of \$1.40 per ton as against a cost of \$2.15 a ton in the unionized portion of the central Pennsylvania field.

In the Westmoreland-Connellsville field, a further reduction of 10 per cent was effective on Aug. 1. These mines are now producing at a cost of 55c. per ton for pick mining against \$1.20 in the central Pennsylvania field. Day wages in the other fields average \$4.50, while in this field the rate is \$7.50. The outside wage is 33.3c. in the West-

moreland field while here the rate is 83½c.

The results since April 1, when the first readjustments were made in the competitive districts, are conclusive proof of the serious condition in which the central Pennsylvania operators find themselves.

FAIRMONT AND PANHANDLE

Mine Idleness General—Tide and Lake Tonnage Dwindles—Prices for Slack Stronger.

FAIRMONT

Mine idleness was general during the last week of July as a result of "no markets." About the only coal moving was that supplied on contracts, railroad fuel taking about 40 per cent of the output. Tidewater shipments were almost nil and Lake tonnage was dwindling. Slack was becoming scarce and prices were advancing.

NORTHERN PANHANDLE

With the demand negligible, very little coal was being produced during the week. There was no Tidewater movement and Lake tonnage was smaller because of an accumulation at the docks. Slack was firmer at \$1.25@1.40. Mine run ranged \$2@2.25 and prepared \$2.40@2.65.

Middle Western

SOUTHERN ILLINOIS

Car Shortage Indications—Steam Shows Improvement—General Operating Conditions Not Satisfactory—Carterville Circular Being Cut.

The only thing of note last week was the reported car shortage on the Illinois Central R.R. This was not so much a car shortage as it was failure to get quick movement and also to move the cars under load.

It is only a matter of a few weeks until the real thing will be with us. The Baltimore & Ohio and Louisville & Nashville are beginning to feel the coming trouble. It is reported that about 50 per cent of the cars sent to the Louisville & Nashville in July for Frisco loading were rejected account of bad order.

Screenings still show a little activity. In Franklin County, the huge piles of screenings are being picked up. At many mines they are the cause of idleness.

The Carterville field continues to hold its own. It is by extreme effort, however, as domestic egg and nut is hard to move.

The big operators—about six in number—hold pretty well to the \$4.05 price on domestic coal. The independents have dragged several association operators to their level of from \$3 up, the average being \$3.50 for domestic coal. Mine run is down to \$2.75, and screenings from \$1.35, up. Average working time varies from one to four days per week. Railroad tonnage is light.

Conditions in the Duquoin field are like those of the independents in the Carterville region.

Mt. Olive district shows no change, except that the price has been increased on country shipments of domestic from \$3.50 to \$3.75. St. Louis and Chicago prices show no change. Working time averages two days per week. Steam coal is going mostly on contracts.

The Standard field is just what it has been. In some places there is a slight increase in domestic movement. Railroad tonnage shows some increase. Working time is from one to three days a week, with no new mines resuming.

Prices range from \$1 up on screenings, the average being \$1.25. Mine run is \$1.75, 2-in. lump \$2 and upward; 6-in. lump, \$2.50 up, and egg and nut, from \$2 up. Shipments are scattered and business is hard to find.

INDIANA

Buying Still Being Delayed—Inquiries Are Picking Up—Prices Unchanged.

Demand for domestic coal is only fair. People apparently are delaying buying their coal in hopes that there will be a reduction in freight rates and a consequent drop in price. There does not seem to be much of a possibility of such a reduction and the people are overlooking an excellent opportunity to obtain prompt delivery.

Retail prices are somewhat lower than last spring and dealers are getting ample supplies of domestic coals, even the high-grade Eastern soft coals, such as Pocahontas—a situation that did not prevail a year ago.

The sudden change for lower temperatures and the first hint of autumn has caused an increase in domestic orders and there is quite a tendency on the part of the industrials to purchase. Jobbers have had more inquiries during the past week than for the two previous months from industrials. Prices are unchanged, but indications point to higher levels late this month.

WESTERN KENTUCKY

Operators More Optimistic—Domestic Demand Better — Prices Up—Good September Business Predicted.

Operators are optimistic concerning the outlook, and are slowly advancing prices for prepared sizes. Mine run is moving a little better at slightly increased prices. Screenings are in good demand at better figures.

There is a fair tonnage of prepared sizes, with much better movement anticipated, in view of the active inquiries from retailers for September deliveries. Consumers have not bought much coal and retail prospects are beginning to improve.

Western Kentucky is especially pleased with the prospects for through rates to Georgia points, which will enable the field to open a new market, from which it is now barred by combination rates. A number of mines are now running three days or better, instead of two.

Middle Appalachian

LOW-VOLATILE FIELDS

Tide Tonnage Declines as Pier Accumulation Grows—Production Suffers from Slump in Demand—Prices Weaker.

NEW RIVER AND THE GULF

New River production ran down to as low as 13,000 tons daily during the last week of July, which was the duller of the season. The falling demand exerted a depressing effect on prices, prepared ranging \$3.75@ \$4, mine run \$2.50 @ \$3 and slack \$2@ \$2.25. Tidewater movement was much reduced and Lake shipments had also been cut down.

Dullness in the Winding Gulf region was very marked, as buying on a spot basis was negligible. Tidewater shipments declined although some producers continued to send coal to the piers where accumulations were growing. Prices were about on a par with those in the New River region.

POCAHONTAS AND TUG RIVER

There was a sharp decrease in the Pocahontas output, where "no market" losses were in excess of 300,000 tons a week. It was necessary to scale down Tidewater shipments because of the poor foreign demand and inability to market much coal in New England. Domestic prices were lower, ranging \$3.75@ \$4 and slack was quoted \$2@ \$2.25.

Tug River production was holding fairly well, being not far short of 80,000 tons during the week. Contracts were sufficient to keep mines in operation about four days, but spot sales were few and much less coal went to Tidewater than during the early part of the month.

HIGH-VOLATILE FIELDS

Stagnant Market Continues — Production Hard Hit—Resultant Coals Higher, with Lower Domestic Call.

KANAWHA

Little coal was produced during the last week of July as a result of the insignificant demand and more mines closed down for an indefinite period. Domestic markets were so sluggish that slack became more scarce and prices increased somewhat, averaging \$1.25@ \$1.50. There was no demand at Tidewater and Lake shipments also were small. No markets held production to about 30 per cent of potential capacity.

LOGAN AND THACKER

Logan production declined somewhat because operators mining storage coal were nearly stocked to capacity, and little coal was being sold. Prices descended to a lower level, which kept operators from resuming work. Domestic grades were sluggish at \$2.50@ \$3, which caused the resultant sizes to increase slightly.

Tonnage mined for storage purposes kept Thacker production at a higher

figure than was observed in other high-volatile fields. Railroad fuel shipments also helped to maintain the output. There was very little spot buying owing to general market conditions.

NORTHEASTERN KENTUCKY

Owing to a slim demand the output did not exceed 35 per cent of capacity. Lake shipments were greatly curtailed and were limited largely to companies having their own docks in the Northwest. Continued industrial inactivity made for a very feeble steam demand.

VIRGINIA

Production rate was unimproved, standing orders being the only ones in effect. This precluded more than 50 per cent production. Small mines with free coal continued to mark time, awaiting a revival of demand which did not loom as imminent.

Southern Appalachian

SOUTHEASTERN KENTUCKY

More Active Inquiry — Little Distress Coal — Low Domestic Demand Helps Screenings Price.

While several of the larger companies in the Straight Creek-Harlan fields are working on a reduced schedule and the tonnage shipped is somewhat less than during July, there seems to be more activity in inquiries, especially for mine run and screenings. Several mines are sold up several weeks ahead on screenings, but are unable to run full time on account of the low demand for block.

Price cutting seems to have reached an end and little coal is being sent out on consignment to be sacrificed to an indifferent buyer.

Best Harlan County block is bringing \$3.25@ \$3.50, with Straight Creek holding up to \$3.50@ \$3.75; mine run, \$2.15@ \$2.40; 2x4 round, \$2.90@ \$3.15, and screenings, \$1.50@ \$1.75.

West

UTAH

Demand Is Improving—Car Shortage Noticeable—Fall Rush Expected.

There is a marked improvement in the coal situation. This is believed to be due to the rumor that operators had decided to add 50c. to the August prices. Car trouble has set in now and threatens to become serious. Men have already been laid off for lack of cars. Railroad officials claim that producers, being short on orders and long on output, have been utilizing empty cars for storage of coal. The D. & R. G., has increased its shop force and cars are being put in good condition as rapidly as possible.

Salt Lake City yards are filled, some of the big retailers adding new yards for storage purposes, in anticipation of the business which is expected to come with a rush in the early fall.



MINE

And

COMPANY NEWS



COLORADO

An area of over 200,000 acres in Colorado previously classified as coal land has been restored to entry upon report of the Geological Survey and 100,000 acres in New Mexico have been classified as non-coal. The Survey has reported on 249 applications for coal prospecting permits under the leasing law; 64 await action and 78 reports have been made on applications for coal leases.

The Colorado Collieries Co., a \$1,000,000 concern, with headquarters in Denver, filed articles of incorporation July 15 with Secretary of State Milliken. The company, which will engage in a general business in coal and its by-products, will have as directors H. D. Lawrence, F. H. Underwood, D. E. Deadrick, F. J. Burdman and R. H. Johnson, according to the articles of incorporation.

The directors of the Colorado Fuel & Iron Co. have passed the dividend on the common stock. The last previous disbursement on the issue was $\frac{1}{2}$ of 1 per cent on May 25 last. The regular quarterly dividend of 2 per cent was declared on the preferred stock, payable Aug. 20 to stock of record Aug. 5.

KENTUCKY

The Amburgy Coal Co., Louisville, with mines in the Hazard field at Daina, has started shipping again, after being down since March 15. The mine has been electrified, a new power house built and shaker screens installed. A number of new miners' homes have also been erected. K. U. Meguire, of the Harlan Coal Co., is head of the concern.

The Darb Fork Coal Mining Co., has leased additional mining properties in the Lotts Creek field, near Hazard, and plans extensions of operations, erection of more miners' homes, and increasing the force.

The Kentucky Block Fuel Co., W. A. Bishop, Gen. Mgr., is remodeling its plant at Elwood, Pike County. Jacobsen horizontal picking-table screens, loading booms and chutes are being furnished by Jacobsen & Schraeder, Inc., of Chicago.

Fred K. Sackett, of Louisville who recently bought the controlling interest in the Harlan Coal Co. has added to his holdings through the purchase of 2,500 acres of unimproved coal lands which are soon to be developed.

MINNESOTA

An investigation into the coal situation at the head of the Lakes and in Minnesota will be conducted by the State Department of Agriculture, which is gathering data and will begin to take evidence from dealers and dock operators at an early date. The investigation is expected to ascertain the amount of coal in the hands of dealers in Minnesota, the amount at Duluth available for the state, estimates of the tonnage needed for this year, and the reasons for the disinclination on the part of the consumers to lay in their usual stocks of coal early in the season.

OHIO

Federal District Judge Sater has granted a temporary restraining order at the request of the Faye Coal Co., of Columbus, stopping the Corning Mining Co., of West Virginia from transferring, endorsing or assigning notes given by the plaintiff in payment for 480 acres of coal land in Perry County. The plaintiff wants a contract of purchase, made last September, rescinded on the ground that the Corning company induced the Faye company to purchase the land by misrepresentations.

The Cambridge Collieries Co., headquarters at Kirby Bldg., Cleveland, large operators in the Cambridge District, have purchased the property of the Pittsburgh-Superior Coal Co., at Wegee, Belmont County. This mine, known as the Cook Mine, has a capacity of 400 tons per day and is located on the Powhattan branch of the Pennsylvania. The consideration involved was not given out. In addition to

this newly acquired property, the Cambridge company also operates the Majestic Mine at Blairmont, on the Wheeling & Lake Erie.

The authorized capital of the Tildesley Coal Co., has been decreased from \$250,000 to \$100,000, by papers filed with the Secretary of State, recently.

PENNSYLVANIA

Work is being rushed on the Big Mountain shaft of the Philadelphia & Reading Coal and Iron Co. Three shifts are on duty. Production will be considerably increased when the shaft is finished.

The Iron Trades Product Co., Pittsburgh, with branch offices at New York and Philadelphia, has been appointed exclusive sales agent for the product of the Donley mine, shipping from Johnetta, Armstrong County, on the Allegheny Valley Branch of the Pennsylvania.

Peale, Peacock & Kerr are installing a set of Jacobsen horizontal picking table screens at their Bald Hill Mine, Clearfield County.

Fatalities in anthracite mining during the first half of the calendar year show a slight increase over the corresponding period of last year, although non-fatal accidents have decreased. Here are the figures for Pennsylvania mining for the six-months period this year and last.

	1920	1921
Total mining fatalities....	481	393
Total anthracite fatalities..	271	273
Total non-fatal accidents....	1364	884
Total anthracite non-fatal accidents	718	559

The above figures, as compiled by Chief Button, of the State Department of Mines, classify only the serious non-fatal accidents, incapacitating workers for sixty days or more.

VIRGINIA

Incorporated with a capitalization of \$1,000,000, the Palmer-Bess Coal Corporation will develop coal land in Keokee district. John A. Palmer, of Reedville, has been elected president with R. W. Palmer, Alta Vista, secretary.

The executive committee of the Clinchfield Coal Corporation has authorized the payment of the usual quarterly dividend of $\frac{1}{2}$ of 1 per cent on the common stock, payable Aug. 15 to stock of record Aug. 10. Earnings for the first half of 1921 were well in excess of the amount necessary for the payment of the usual dividend on the common stock, after setting aside all reserves, including federal taxes, and providing for the dividend and sinking fund on the preferred stock and with the sinking fund for the recent issue of 8 per cent notes covered until August, 1922.

The Hampton Roads Port Commission, in session at Norfolk, cited the fact of Hampton Roads' preponderance in coal dumpings as one of the "selling points" to be used in the State-wide effort to secure proper development for the port. The mining regions will be visited this fall by a group of representative Hampton Roads citizens, for the purpose of encouraging the citizens of that section to aid in the port development.

WEST VIRGINIA

The McKeefrey Coal Co., of West Virginia has begun development on a tract of coal land at McMillan Station, Marshall County, five and a half miles south of Moundsville. The E. M. Wichert Co., of Pittsburgh, has been awarded the contract for two concrete-lined shafts.

Organization of the Parsons Consolidated Coal Co., with a capitalization of \$750,000 was for the purpose of taking over several companies in which A. F. Parsons and others of Huntington were interested, the companies so merged being the Chilton Eagle Coal Co., the Peach Creek Coal Co., and the Parsons Coal Co., all of Logan County. Included in the merger was the Perry County Coal Co., of Hazard Ky.

The headquarters of the new company are at Huntington, A. F. Parsons being the president. C. W. Lloyd has been elected as secretary-treasurer.

Stoyer is to be the seat of operations of the Potomac River Coal Co., where a new plant is nearing completion. Only recently the company finished putting in a siding and building an incline, in addition to installing other equipment. Within the next few weeks it will be possible to have the new plant in shape for the beginning of operations. This plant is under the superintendency of Ira Mercer.

In connection with recent mention made of the installation of a plant by the Dean Coal Co. on the Tygart's Valley River near Philippi, it is now learned that this company has completed work on a new tippie and is engaged in putting in a set of boilers. Rope haulage will be used as a means of getting coal across the river to the line of the B. & O.

The Atlantic and Pacific Fuel Corporation, of Bluefield, has filed a voluntary petition in bankruptcy, listing its liabilities at \$113,852.87, with assets of \$137,691.84. The liabilities are mostly open accounts owing to coal companies mostly in southern West Virginia fields.

The Gauley Mountain Coal Co., Robert Morris, gen. mgr., of Ansted, have contracted with Jacobsen & Schraeder, Inc., of Chicago, Ill., for tippie equipment at their No. 3 mine. Jacobsen picking tables, loading booms, weigh basket, chutes and conveyors to bins are to be installed. Steel storage bins having a capacity of 1,000 tons also are to be built.

Organization of the Cliff Coal Mining Co. presages the mining of coal on a fairly large scale in Sherman District of Boone County, this company having just been organized with a capitalization of \$150,000. Largely interested in the new concern are L. J. Q. Dickinson, L. D. Burns, B. M. Green, Frank Webb and U. G. Young, all of Charleston.

The General Coal Co., of Huntington, headed by W. J. Quinn, has increased its capitalization from \$50,000 to \$100,000 and the Export Coal Co., headed by A. O. B. Hogue, of Export, has increased its capitalization from \$50,000 to \$150,000. In the list of companies recently dissolved were the following: Alcone Coal Co., of Williamson, of which J. Woolford was president; Glendale Coal Co., of Wheeling, of which E. T. Hitchman was president; Mondale Coal Co., of Charleston, of which F. S. Monahan was president; Wyoming Coal & Coke Co., of Huntington, of which Thomas H. Harvey was president; Clear Creek Coal Co., of which J. H. Murray of Huntington was president; Matewan Coal Co., of Williamson, of which C. M. Gates, was president; Deegans Eagle Coal Co., of which W. E. Deegans, of Huntington was president; Smith-McCue Coal Co., of which J. C. Smith, of Morgantown was president.

Several tracts of coal land changed hands in Grant District of Monongalia County late in June. The Whyel Coke Co. sold to Thomas M. White, of Uniontown, three tracts of coal in Grant District, this coal being in the Sewickley seam. The three tracts brought \$28,642. Mr. White also purchased from the Whyel company a tract of 100 acres of Sewickley coal in Grant District for the sum of \$15,127.50. The Whyel company secured from Harry Whyel and wife 88 acres plus, paying for the same the sum of \$13,311.90.

Owing to present market conditions a decision has been reached by Hall Bros. & Co. to close their Fairmont office. No statement was made as to whether this firm would open offices again following a recovery of industry from its present slump.

Work is being completed on the steel bins and head frames of the Davis Coal & Coke Co.'s tippie at Pierce, this being known as the company's No. 39 operation. At the Kempton mine of the same company, the head-frame is being raised in height so as to permit installation of a weigh-pan such as has been installed at Pierce.

Traffic News

In the complaint of the **Canton Coal Co.** involving rates on bituminous coal from mines at Rawalt, near Canton, Ill., to St. Paul, the I. C. C. has authorized the Rawalt Coal Co. to intervene.

In the complaint of the **Illinois Coal Traffic Bureau**, relating to rates on coal from various mines in Illinois to Council Bluffs, Omaha and South Omaha, the **Central Illinois Coal Traffic Bureau** has been permitted to intervene.

In the complaint of the **Sligo Iron Store Co.**, the I. C. C. decides that shipments of coal from Cokton, W. Va., to Lamar, Col., in 1919 were overcharged, a rate of \$9.20 a ton being imposed, which it says should not exceed \$8.

The **Duluth & Iron Range R.R. Co.** report for the year ended Dec. 31 last shows gross income of \$11,471,820; total deductions, \$8,721,491; net income, \$2,750,329; applied to sinking fund and other reserve funds, \$1,254,448, and a surplus of \$1,495,881.

On recommendation of the board of directors, stockholders have authorized an increase of \$53,000,000 in the capital stock of the **Louisville & Nashville R.R. Co.** and authorized the board to apply to the Interstate Commerce Commission for permission to distribute proceeds of the new issue as a stock dividend. Steps also were taken to execute a blanket mortgage upon the company's property as security for first mortgage and refunding gold bonds to fund as much as may be deemed necessary of the debt of the road, which on December 31 last was \$166,300,825.

Personals

Notice has been issued by the **Lehigh Valley Coal Co. and Cox Brothers & Co., Inc.**, that **H. W. Montz**, formerly division superintendent at Hazleton, has been appointed assistant general manager with headquarters at Wilkes-Barre. **R. A. Evans**, formerly mining engineer, has been appointed superintendent of the Hazleton Division.

General Thomas Coleman duPont, of Wilmington, newly appointed senator from Delaware, succeeding Senator Wolcott for the term ending March 4, 1923, has long been interested in the coal business, having engaged extensively in mining in Kentucky since 1896. He is now president of the **Central Coal & Iron Co.**, as well as the **McHenry Coal Co.** and the **Main Jellico Mountain Coal Co. of Kentucky**.

C. M. Means, consulting mining engineer of Pittsburgh, Pa., has returned from a ten-day trip through western Kentucky. He leaves in a few days for another extended trip through the same region.

H. E. Stone, coal dealer, is one of three candidates for the Democratic party for Mayor of the City of Bowling Green, Ky., subject to action of the primary on Aug. 6.

Trade Catalogs

Ten Years' Experience in Water Works Pumps—**DeLaval Steam Turbine Co.**, Trenton, N. J. Pp. 100; 8½ x 11 in.; illustrated. A manual for water works officials and engineers; charts and tables.—Advertiser.

Armco in Pictures and Facts—**The American Rolling Mill Co.**, Middletown, Ohio. Pp. 246; 6 x 9 in.; illustrated charts and tables. Following the process of Armco ingot iron from the mine to the finished product.—Advertiser.

Power Plant Piping—**The M. W. Kellogg Co.**, New York, N. Y. Pp. 30; 7 x 10 in.; illustrations and tables. Describing installations of piping of all types.

Lunkensheimer "Ferrenew" Valves—**The Lunkensheimer Co.**, Cincinnati, Ohio. Pp. 12; 3½ x 6 in.; illustrations and tables.—Advertiser.

The Sullivan Turbine Hoist—**Sullivan Machinery Co.**, Chicago, Ill. Bulletin 76. Pp. 4; 6 x 9 in.; illustrated. Description of small hoist for numerous uses in mines, etc.—Advertiser.

The Jeffrey Pit-Car Loader—**The Jeffrey Manufacturing Co.**, Columbus, Ohio. Catalog 336. Pp. 8; 7 x 10 in.; illustrated. Describing the new Jeffrey 38-A Pit-Car Loader.—Advertiser.

T. R. Self-Starting Automatic Motor—**The Triumph Electric Co.**, Cincinnati, Ohio. Pp. 4; 8 x 11 in.; illustrated.—Advertiser.

C-H Brakes—**Cutler-Hammer Mfg. Co.**, Milwaukee, Wis. Publication 850. Pp. 16; 8½ x 11 in.; illustrated. Describing types M. R-S, and W-T brakes.—Advertiser.

Recent Patents

Miners' Electric Safety Lamp. Theodore Stretton, Cardiff, Wales, assignor to **Haslam & Stretton, Ltd.**, Cardiff, Wales, 1,373,382. Filed May 10, 1920. Serial No. 380,254.

Mining Machine. Morris P. Holmes, Claremont, N. H., assignor to the **Jeffrey Manufacturing Co.**, Columbus, Ohio, 1,377,132. May 3, 1921. Filed June 13, 1916; serial No. 103,507. Renewed July 17, 1920; serial No. 397,146.

Drag-Line Excavator. Arthur S. Robinson, Dayton, Ohio, 1,377,278. May 10, 1921. Filed June 29, 1918; serial No. 252,656.

Loading Machine. Frank Billings and Robert P. Greenleaf, Cleveland, Ohio, 1,377,303. May 10, 1921. Filed April 25, 1918; serial No. 230,652.

Safety Device for Drills. Henry V. Johnson, St. Paul, Minn., 1,377,487. May 10, 1921. Filed April 12, 1920; serial No. 373,317.

Drag Scraper. Wm. E. Hale, Fort Washington, Pa., assignor to **R. H. Beaumont Co.**, Philadelphia, Pa., 1,377,830. May 10, 1921. Filed Feb. 7, 1920; serial No. 357,096.

Safety Shotfirer. C. F. Oaka, Lovettville, Alta., Canada, 1,377,915. May 10, 1921. Filed April 29, 1920; serial No. 377,632.

Mining Machine. Nils D. Levin, Columbus, Ohio, assignor to **The Jeffrey Mfg. Co.**, Columbus, Ohio, 1,377,842. May 10, 1921. Filed March 8, 1917; serial No. 153,471. Renewed April 2, 1921; serial No. 458,088.

Flotation Process. Charles Spearman, Westmount, Quebec, Canada, 1,377,937. May 10, 1921. Filed July 22, 1918; serial No. 246,126.

Loading Machine. Wm. Whaley, Knoxville, Tenn., 1,379,427. May 24, 1921. Filed Nov. 26, 1917; serial No. 204,032.

Shoveling Machine. Wm. Whaley, Knoxville, Tenn., 1,379,428. May 24, 1921. Filed Sept. 8, 1919; serial No. 322,263.

Mine-Car Tag-Holder. K. F. Begley, Star, Ky., 1,379,514. May 24, 1921. Filed Sept. 23, 1921; serial No. 412,178.

Gravity Car Control for Mine Hoists. Daniel F. Lepley, Connellsville, Penn., 1,379,870. May 31, 1921. Filed Jan. 22, 1921; serial No. 439,204.

Mine-Car Coupling. Isaac Martin, Pittsburgh, Pa., 1,380,301. May 31, 1921. Filed Feb. 28, 1921; serial No. 448,704.

Association Activities

Michigan Retail Coal Dealers' Association

Addressing the **Michigan Retail Coal Dealers' Association** in Grand Rapids, Mich., July 21, James S. McCarthy, of Philadelphia, field secretary of the **National Retail Coal Merchants' Association**, placed blame for present coal trade conditions on the activities of federal "peeping Toms." He asserted that attempts to nationalize business and industry have proceeded for thirty years, until regulation by the government of all trade lines seems imminent. The bill presented in Congress by Representative Rhodes, providing for the acquisition of land to be used as government fuel yards in Washington, D. C., he described as a step toward attainment of the socialist aim and "an entering wedge to the establishment of federal fuel yards throughout the United States."

Obituary

Stuart Manwaring Buck, consulting engineer, died at his home in Bramwell, W. Va., July 16, 1921, at the age of 79 years. He was graduated from Williams College in 1864, after which he studied mining engineering at the Massachusetts Institute of Technology and at the School of Mines in Freiberg, Germany. Mr. Buck was one of

the pioneers in the development of the coal fields of West Virginia. From 1872 to 1879 he was connected with the **Kanawha & Ohio Coal Co.** as engineer and as lessor; from 1877 to 1888 was general manager of the **East Bank Coal & Coke Co.**; from 1888 to 1900 was president and general manager, **Norfolk Coal & Coke Co.**, and from 1900 to 1904 was general manager of the **Dry Fork Coal Land Co.** In 1904 he engaged in consulting practice but retained a business interest in the **Pocahontas Fuel Co.**, of which he was a director. He became a member of the **American Institute of Mining and Metallurgical Engineers** in 1871 and was a manager of the Institute from 1883 to 1885. In 1872 he married Grace Ross, of Bangor, Maine, by whom he is survived, as well as by three children, Clifford R. Buck, of Philadelphia; Mrs. Edward C. Sherman, of Washington, and Miss Theda Buck, of Bramwell, W. Va.

Publications Received

Saward's Annual for 1921, a statistical review of the coal trade, edited and published by Frederick W. Saward (15 Park Row, N. Y., price \$2.50), is now at hand. This book is always welcome at the desk, because it brings together so much in the way of statistical information that is otherwise scattered in government reports and trade papers. The book would be just as useful, however, if much of the text dealing particularly with the trade reviews were eliminated and the volume made more of a ready-reference handbook.

Coming Meetings

The Huntington Coal and Industrial Exposition will be held in the Chamber of Commerce Building, Huntington, W. Va., Sept. 19 to 24 incl. Chairman of committee, Thomas A. Palmer, Huntington Chamber of Commerce, Huntington.

American Institute of Mining and Metallurgical Engineers will meet at Wilkes-Barre, Pa., Sept. 12 to 17. Secretary F. F. Sharpless, 29 West 39th St., New York City.

National Association of Cost Accountants will hold its annual convention at Cleveland, Ohio, Sept. 14, 15 and 16. Secretary, S. C. McLeod, 130 West 42d St., New York.

The American Mining Congress and National Exposition of Mines and Mining Equipment. The twenty-fourth annual convention on Oct. 17 to 22 at the Coliseum, Chicago, Ill. Assistant secretary, John T. Burns, Congress Hotel, Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting at Huntington, W. Va., on Sept. 20 to 23. Secretary-treasurer, Herbert Smith, Huntington, W. Va.

The following first-aid meets will be held during August: Under the auspices of the **Colorado Fuel & Iron Co.** a local first-aid and mine-rescue meet will be held at Pueblo, Col., on the 20th. The **Lehigh Coal & Navigation Co.**, field day and first-aid meet is on Aug. 13 at Greenwood Park, Hauto, Pa.

New York State Coal Merchants' Association, Inc. will hold its annual convention at Richfield Springs, N. Y., on Sept. 8, 9 and 10. Executive secretary, G. W. F. Woodside, 250 Arkay Bldg., Albany, N. Y.

Canadian Institute of Mining and Metallurgy will hold its annual Western meeting at Edmonton, Alberta, Canada, Sept. 14, 15 and 16. Convention secretary, T. B. Williams, 10,610 83d Ave., Edmonton, Canada.

American Manufacturers Export Association will hold its twelfth annual convention at the Waldorf-Astoria, New York City, Oct. 5 and 6. Secretary A. W. Willmann, 160 Broadway, New York City.

National Safety Council will hold its annual congress at the State House, Boston, Mass., Sept. 26 to Sept. 30 inclusive. Secretary, S. J. Williams, Chicago, Ill.

The Coal Mining Institute of America will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary, H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

An Industrial Relations Conference for all industries in the State of Pennsylvania has been arranged for Oct. 24 to 27 at Harrisburg, Pa., by the Commissioner of Labor and Industry, C. B. Connelly.

The sixth annual convention of the **National Association of Purchasing Agents** will be held Oct. 10-13 at Indianapolis, Ind.